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OF THE

AMERICAN LEATHER CHEMISTS ASSOCIATION

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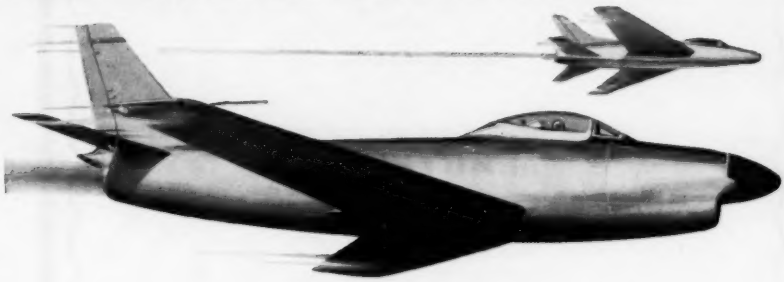

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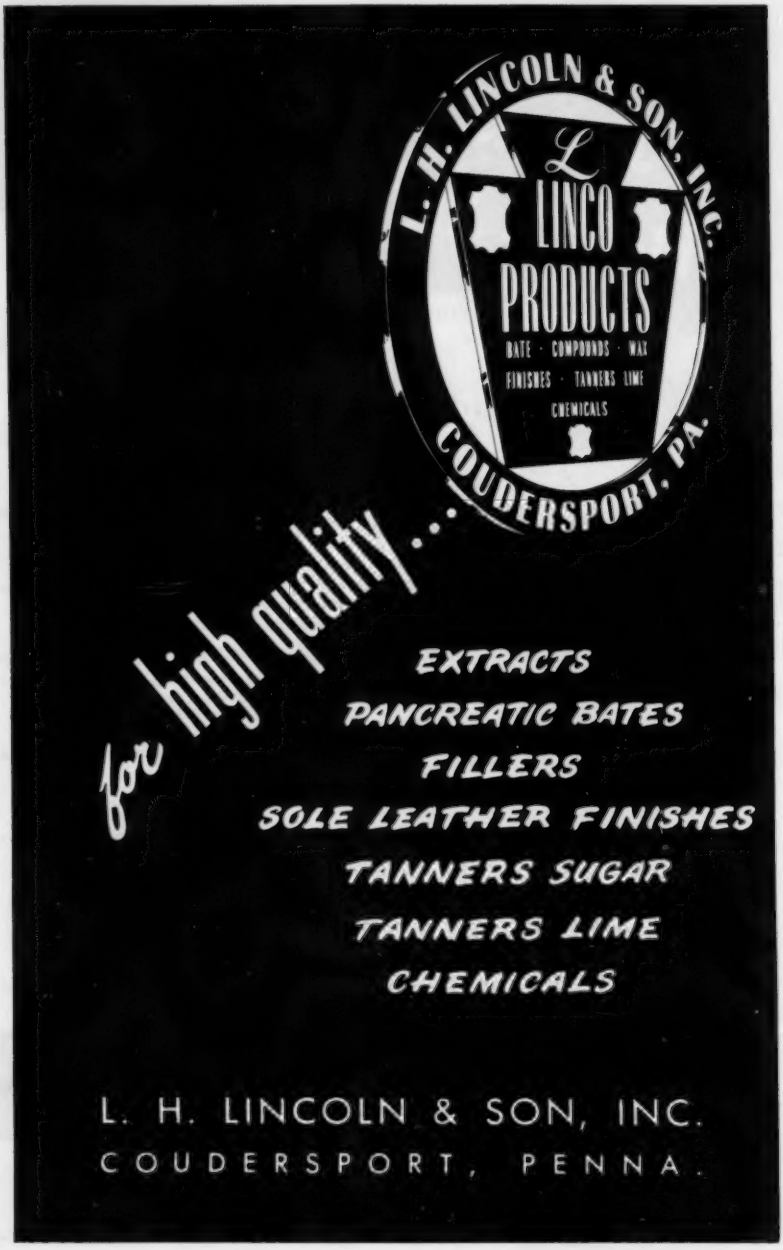
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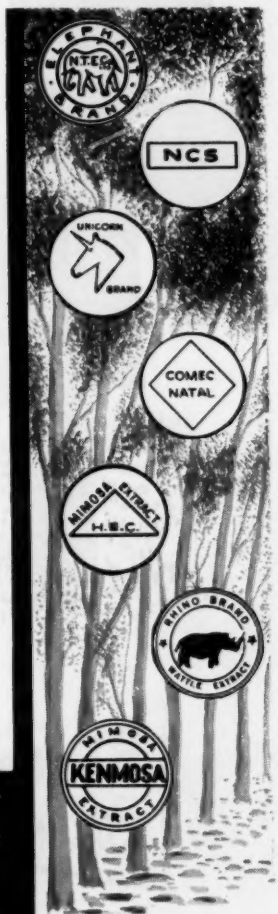

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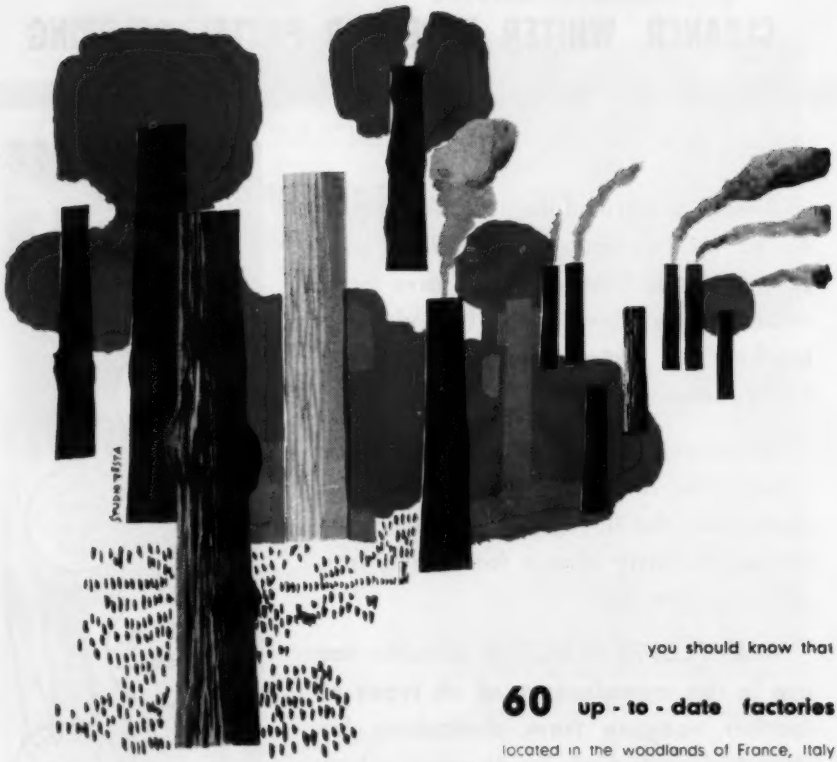

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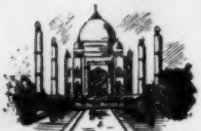

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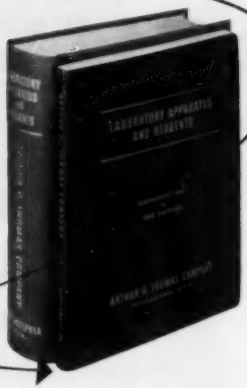

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AMERICAN LEATHER CHEMISTS ASSOCIATION

Vol. L AUGUST 1955 No. 8

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Title. Use specific and informative title. A main title and a suitable subtitle are preferred to one lengthy title.

Authorship. Given name and initial of second name are generally adequate for correct identification. Omit titles. Give complete mailing address of place where work was conducted.

Abstract. Tell why investigation was undertaken, summarize results as specifically as possible, and indicate their significance. It shall be placed at the beginning of the article.

Text. Manuscript shall be typed on regular 8½"x11" typewriter sized sheets, on one side only, and text shall be double spaced. General style shall follow that of the Journal. Use the word "per cent" in the text rather than the designation "%".

Nomenclature. Follow nomenclature style (not symbols) of *Chemical Abstracts*; avoid trivial names. If trade names are used, define at point of first use. Use consistent units of measurements. Write all equations and formulas clearly and number equations consecutively.

Tables. Avoid duplication between tables and figures. Prepare tables in consistent form, furnish each with an appropriate title, and number consecutively. Submit tables typed (double-spaced lines and wide margins) on separate pages. Positions of tables in the text shall be indicated by such designation as "Insert Table X here". Column headings should be followed by the unit of measure involved, e. g., Tensile Strength, lb./in.^{2}, or Temperature, °C.

Illustrations. Submit original drawings, or sharp prints, of graphs and diagrams and clear glossy photographs. Prepare original drawings on tracing cloth, or high quality paper; use black India ink and a lettering set. Choose graph papers with blue cross-sectional lines; other colors interfere with good reproduction. Label ordinates and abscissas of graphs along the axes and outside the graph proper. Figure captions and legends are set in type and need not be lettered on the drawing. Number all illustrations consecutively. Furnish typed captions and legends (plus courtesy lines for photos) on a separate page.

Acknowledgment. Include credits in an "Acknowledgment" section at end of text rather than in the text or in footnote.

Literature Cited. Number citations consecutively, and use appropriate numbers (as superscripts) in the text to indicate references. Do not list references "in Press" unless they have been formally accepted for publication. Give complete information as follows: names of author or authors followed by initials, volume, page number and year, thus for journals:

Wendkos, J., and Somerville, I. C., *J. Am. Leather Chemists Assoc.* **48**, 355 (1953). Reference to books shall name the authors, followed by initials, title of book, page number if pertinent, name of publisher, and year of publication.

References to patents shall show the name of patentee and his initials, country of issue, patent number and date of issue.

Literature citations should appear at the end of the article.

Copies. Send original ribbon copy and one legible carbon copy of manuscript. Mimeograph or ditto copies are acceptable only if they are very clear. Send only complete copies with illustrations of a size that can be mailed to reviewers under one cover with manuscript. If drawings are mailed under separate cover, identify by name of author and title of manuscript. Advise the editor if drawings or photographs are to be returned to the authors.

Send manuscripts with covering letter to Dean Williams, Editor, The Journal of the American Leather Chemists Association, Drawer 152, Coudersport, Pa.

The Editor

GUIDE TO ABSTRACTORS

Titles, authors and references shall follow the general instructions under *Guides to Authors*, with the exception that addresses of the authors are to be omitted. Following is an example: Unhairing by Means of Enzymes. By G. H. Green. *J. Soc. Leather Trades Chemists* **36**, 127(1952).

Abreviations of publications shall be the same as employed in Chemical Abstracts. Where a reference to a publication occurs in the text or the abstract, it shall be of the same general form as the reference in the title of the abstract and enclosed in brackets.

Abstracts are to contain the pertinent facts in the respective articles, stated in a clear, concise manner.

All abstracts are to be on regular 8½″ x 11″ typewriter paper, with double and triple spacing between abstracts.

The Editor

COUNCIL MEETING MINUTES

AMERICAN LEATHER CHEMISTS ASSOCIATION

MAY 22, 1955

SWAMPSCOTT, MASSACHUSETTS

A meeting of Council convened at 9:20 P. M. on May 22. Present were President Flinn, President-Elect Thorstensen, Council Members Maeser, Henrich and Meo, and Secretary O'Flaherty.

The minutes of the February 11 meeting, which had been approved by mail, were given a final approval.

Reporting for the Technical Committees, Mr. Thorstensen advised that all committees have been well organized and that each had a program in progress. Meetings have been arranged for all committees requesting one. A report on the combined activity will be made later.

Mr. Meo reported that the attendance promised to be a record breaker and that all arrangements were complete for the meeting.

Council made a final approval of the recommendation of the Kaolin Committee on Batch B9498 of Arthur H. Thomas Company.

President Flinn appointed the following tellers:

CHESTER ROSS
ROBERT SHAW,
R. HENRICH, *Chairman.*

Mr. Maeser was appointed chairman of a committee to explore the possibility of A.L.C.A. becoming affiliated with A.S.T.M. Mr. Maeser made a report which is appendage A of these minutes. Council approved the proposed plan in principle and proposed to submit the matter to the membership for final approval.

The following persons were elected to active membership: D. Murray Wettlaufer, Jose Rico Estenssoro, Charles L. Hoyt, Joseph Naghski, Otto Novotny, Zygmunt Panzer, and John C. Williams.

There being no further business the meeting adjourned at 10:00 P. M.

Respectfully submitted,

FRED O'FLAHERTY, *Secretary.*

APPENDAGE "A"

TO THE COUNCIL OF THE AMERICAN LEATHER CHEMISTS ASSOCIATION

MAY 20, 1955

At the meeting of the Council in Chillicothe, Ohio on February 11, the writer was asked to investigate the possibility of establishing some form of working agreement between the American Leather Chemists Association and the American Society for Testing Materials. A meeting held in New York on April 15 which was attended by Mr. R. E. Hess, Technical Secretary, and Mr. Speight, coordinator of all ASTM joint committees; and by Mr. Thorstenson and the writer, of the ALCA.

The discussion at the meeting pertained mostly to methods by which the two associations could work out a joint program for establishing methods for leather testing. Discussions were limited to Physical Testing methods, no consideration being given to any of the chemical aspects of leather. After considering several possibilities for joint action by the two associations, the feeling developed that if any action is taken, it should be along the line of establishment of a joint working committee consisting of representatives of the ALCA and such industries and scientific groups as are required on ASTM committees; meetings to be held under the joint auspices of the associations. The standards and methods would be published by both the ALCA and the ASTM as joint standards.

A letter from Mr. Hess and an official statement of the ASTM regarding joint activities with other societies is attached to this report. These two documents set out the basis on which other joint effort is being conducted under the auspices of the ASTM. There was a clear feeling at the meeting that, if a joint committee representing the two societies is established, the prestige of the work of the committees of both societies would be greatly enhanced and the importance of leather and leather products as industrial materials would be emphasized. If it is the sense of the Council that the establishment of such a committee would be in the best interest of the ALCA, it is suggested that the responsibility for establishing such relations be placed directly under the direction of the President-Elect as coordinator of committee activities. This is a matter which will vitally affect the future of the Association and should be under the direct supervision of the administration and council.

M. MAESER

AMERICAN SOCIETY FOR TESTING MATERIALS

at Logan Square on the Benjamin Franklin Parkway

1916 RACE STREET, PHILADELPHIA 3, PA.

April 26, 1955

Mr. Mieth Maeser
Research Laboratory
United Shoe Machinery Corp.
Beverly, Mass

Dear Mr. Maeser:

It was a pleasure for Mr. Speight and me to meet with you and Mr. Thorstensen on April 14 to discuss the establishment of ASTM standards on leather. Some of our comments with respect to the setting up of cooperative relations with other organizations are set forth in the accompanying statement.

So far as the work on leather is concerned, it would appear to us that the setting up of a joint work committee of the ALCA and the ASTM would have much to commend it. The nucleus of such a group would, of course, be augmented by various individuals to bring in certain other interests and the ASTM might very well arrange to secure representation from the automotive interests, the merchandisers such as Sears-Roebuck and some other stores such as Macy and Co. The Government agencies are largely represented on ASTM committees and we should like to see the same apply in the present instance although I believe you already have the principal individuals involved. Chemical companies such as Rohm and Haas, and American Cyanamid which manufacture leather chemicals, and testing apparatus companies such as Tinius Olsen would also be interested. I believe a committee constituted in this way would meet any of the Society's requirements with respect to representation and should be able to function quite efficiently. Most of the standards would no doubt be issued as joint standards of the two organizations and would appear in the ASTM Book of Standards as such.

We are informing the ASTM Board of Directors, which meets on May 9 and 10, of our recent discussions although naturally we are submitting no recommendations for establishing such a committee pending your further discussions and considerations. If it develops it would be desirable to proceed further, presumably the logical next step would be to have a meeting of a small steering committee made up of representatives of the two organizations.

Very truly yours,

R. E. Hess, *Technical Secretary*

AMERICAN SOCIETY FOR TESTING MATERIALS

JOINT ACTIVITIES WITH OTHER SOCIETIES

It is the policy of ASTM to cooperate with other organizations both in standardization work and in research activities wherever a common interest exists. There is considerable flexibility in arrangements that are set up and there is no single fixed pattern under which this cooperation is accomplished. In a great number of instances cooperation is effected by having representatives of these various organizations serving directly on ASTM committees. In other instances, specific aspects of committee work are handled in joint subcommittees where the same group functions as a subcommittee of an ASTM committee and also as a subcommittee of some other organization. Instances of this are subcommittees of Committee D-12 on Soaps and Other Detergents where the methods of chemical analysis are developed by a group functioning both under Committee D-12 and the American Oil Chemists Assn., and subcommittees of Committee D-23 on Cellulose and Cellulose Derivatives where the same group of individuals carries on the work under ASTM (Committee D-23), the American Chemical Society, and the Technical Association on the Pulp and Paper Industry. In other instances the cooperation is effected by liaison joint committees having representation both from the appropriate ASTM committee and the corresponding committee of the other organization, simply to insure that each is informed of the activities of the other and to maintain unification of the standards of the two organizations. Such groups have been set up between ASTM Committee D-13 on Textiles and the American Association of Textile Chemists and Colorists. This type of coordinated effort is advantageous where the participating organizations have their own standards.

A very effective setup is where the entire working group is under the joint auspices of two or more organizations. Any recommendations (standards) developed by that working group can then be reported appropriately to one or more of the sponsor organizations. Such joint committees can be set up with specific representation from the several sponsoring groups (see for example the Joint Committee on Definitions of Terms Relating to Heat Treatment). Frequently an integrated group is even more effective, a group where there is no indication that the individuals on the committee are specifically the representatives of one or the other of the sponsoring organizations, but where the entire object is to see that a well rounded, representative, efficient group of individuals is appointed. An outstanding instance of such an integrated group is the Joint Committee on Filler Metal, functioning under the joint sponsorship of the ASTM and the American Welding Society. The standards developed in this joint committee are reported both to the ASTM and to the AWS and are published by each organization.

So far as the ASTM is concerned, the important criteria for a working joint committee are that the members are competent, the committee is sufficiently representative, and the usual procedures for the establishment of standards are followed as set forth in the Regulations of the Society. No assignment of the individuals on the committee need be made to any of the sponsoring organizations although it is to be expected that the members of the committee will be members of one or more of these sponsoring organizations.

The usual requirements of the Society for the submission of reports, the periodic review of standards under its jurisdiction, and other matters would apply, but these are generally recognized as conducive to good committee operation and are either in accord with the general practice of the cosponsoring organizations or at least fully acceptable to them.

COUNTIL MEETING MINUTES

AMERICAN LEATHER CHEMISTS ASSOCIATION

MAY 25, 1955

SWAMPSCOTT, MASSACHUSETTS

Council met at 11:05 A.M. on May 25. Present were Messrs. Flinn, Thorstensen, Weldon, Maeser, Stubbings, Compton, Meo, Williams, Wederbrand, and O'Flaherty.

The results of the Tellers counting the votes cast were read. It was made official that the following new Council members were elected:

ELL DEE COMPTON
ROBERT STUBBINGS
ROBERT WELDON

The Tellers Committee was discharged with thanks. The Tellers were:

CHESTER ROSS
ROBERT SHAW
R. HENRICH, Chairman

President Flinn welcomed the new Council members.

The minutes of May 22 were approved as read by the Secretary.

Mr. Meo reported briefly on the Convention. He reported the following dates have been reserved for future meetings:

1956 dates are June 17-18-19-20
at Mackinac Island.
1957 dates are June 2-3-4-5
at Lake Placid.

Dates were claimed for—

1958 on May 25-26-27-28
at Swampscott.

It was understood that if future Councils or Convention Committees are not agreed, they may cancel these dates. So many organizations are claiming dates far in advance, it was felt this action was desirable.

Council approved the bill of $1,050. for the Presidential Reception. Council's action increased the amount previously budgeted by approximately $200.00.

Mr. Wederbrand reported that from all indications the Convention will close in a solvent manner; and he will make a formal report to Mr. Meo, Convention Chairman, in the near future.

There was some discussion regarding the advisability of employing a professional firm to organize the annual meeting. This was deferred to a future meeting.

The Editor reported he had four or five papers. He advised that with the limited number of papers given at the meeting he was not certain he would have sufficient publishable material for 1955-56. He reported that the Editorial Board had met Monday evening and discussed various matters covering the Journal.

It was the suggestion of Council that the next supplement giving the discussions of the panel members of the production clubs be published in the same size of the Journal, so that it could be bound with the other monthly issues of the Journal for that particular year. This suggestion was referred to the Editor and Editorial Board.

It was moved by Mr. Maeser that $1,000. be set aside from the annual funds, to be awarded to the writer of an outstanding paper to help cover expenses to the 1957 meeting of the International Union of Leather Chemists Societies. Council approved the motion and instructed the secretary to set the $1,000. aside. This award is to be limited to active members. The papers are to be judged by a committee to be appointed by the president.

Dr. Stubbings suggested that in the future all published papers be preceded by an abstract of 300 to 600 words. This was referred to the Editor to discuss with the Editorial Board.

The question arose as to what press releases an author was justified in giving to the press. It was agreed that all such matters should be referred to the Editor.

The secretary was instructed to send a letter to each person who submits a paper advising them of the conditions as set forth in the By-Laws. Council referred this matter to the next Convention Chairman.

The A.S.T.M. affiliation matter was discussed. Since there was some opposition to this affiliation due to the lack of details of the procedures to be followed, Mr. Maeser was requested to pursue the matter and when a detailed plan is available it will be published. All members will have an opportunity to review it.

The question of whether display booths were worth while was discussed and action deferred until a latter meeting.

The secretary is to prepare a card to be submitted to each member with his bill for 1956 dues, on which his interest will be solicited and such record will be helpful in the future in selecting men for committees.

Dr. Flinn informed Council of a need to organize a committee on Raw Stock Methods. A motion was made by Mr. Maeser that a new committee on Raw Stock Methods be organized, seconded by Mr. R. Weldon, and approved unanimously. President-Elect Thorstensen will set up the committee and outline the scope of their work.

The following applicants meeting the requirements for active membership were elected: Bjorn E. Samuelsson, William A. Daniels, Palmer B. Swanson, T. Joseph O'Connor, W. P. Frietz, John Tomlinson, George Katz, and Ralph Hoyt.

President Flinn appointed the following committees:

Nominating Committee—1956
CHAS. W. MORRISON, Chairman
LESTER WHITMORE
ROBERT LOTZ

Awards Committee—1956
ROBERT M. KOPPENHOEFER, Chairman
RALPH PORTER
EDWIN OCHS

The next Council meeting will be held the first week in October in Philadelphia. The secretary will deliver by mail the exact date.

There being no further business the meeting adjourned at 12:20 P.M.

Respectfully submitted,

FRED O'FLAHERTY, *Secretary*

Status of the Association as of February 1, 1955

MEMBERS:			
Active	503	New in 1954	78
Associate	342	Lost in 1954	56
Student	1		
	846	Gain	22
SUBSCRIBERS:			
Domestic	75	New in 1954	52
Foreign	170	Lost in 1954	58
	245	Loss	6
MUTUAL MEMBERS:			
(S.L.T.C.)	169	Gain in 1954	14
EXCHANGE SUBSCRIPTIONS:			
Domestic	13		
Foreign	43	Gain in 1954	1
Canadian	1		
	57		
Copies to Advertisers	91	Decrease in 1954	1
TOTAL JOURNAL			
Circulation	1,408	Increase in 1954	30

Circulation Breakdown

	United States	Foreign	Canadian	Total
Active Members	428	47	28	503
Associate Members	294	32	16	342
Student Members	—	1	—	1
Mutual Members	—	169	—	169
Subscribers	70	170	5	245
Exchange	13	43	1	57
Advertisers	91	—	—	91
Total	896	462	50	1,408

Members Breakdown

	Active	Associate	Student	Total
United States	428	294	—	722
Canada	28	16	—	44
Foreign	47	32	1	80
Total	503	342	1	846

Members Breakdown

	Active	Associate	Student	Total
Maine	—	—	—	—
New Hampshire	12	7	—	19
Vermont	1	—	—	1
Massachusetts	73	64	—	137
Rhode Island	1	—	—	1
Connecticut	3	4	—	7
New York	44	39	—	83
New Jersey	61	45	—	106
Pennsylvania	63	38	—	101
Delaware	11	6	—	17
Maryland	7	7	—	14
Washington, D. C.	8	—	—	8
Virginia	8	1	—	9
W. Virginia	2	3	—	5
North Carolina	3	2	—	5
South Carolina	—	—	—	—
Georgia	3	2	—	5
Florida	—	—	—	—
Kentucky	—	1	—	1
Tennessee	8	2	—	10
Alabama	—	—	—	—
Mississippi	—	—	—	—
Ohio	23	10	—	33
Indiana	2	2	—	4
Illinois	26	23	—	49
Michigan	14	6	—	20
Wisconsin	37	21	—	58
Minnesota	3	—	—	3
Iowa	—	2	—	2
Missouri	8	4	—	12
Arkansas	—	—	—	—
Louisiana	—	1	—	1
North Dakota	—	—	—	—
South Dakaota	—	—	—	—
Nebraska	—	—	—	—
Kansas	—	—	—	—
Oklahoma	—	—	—	—
Texas	1	—	—	1
Montana	—	—	—	—
Idaho	—	—	—	—
Wyoming	—	—	—	—
Colorado	—	—	—	—
New Mexico	—	—	—	—
Arizona	—	—	—	—
Utah	—	—	—	—
Nevada	—	—	—	—
Washington	1	—	—	1
Oregon	—	—	—	—
California	5	4	—	9
Total	428	294	—	722

Foreign Members Breakdown

	Active	Associate	Student	Total
Denmark	1	—	—	1
Israel	1	—	—	1
India	4	1	—	5
Cuba	2	3	—	5
Brazil	6	1	—	7
Puerto Rico	—	1	—	1
Switzerland	3	—	—	3
France	—	5	—	5
Italy	—	1	—	1
Argentina	4	2	—	6
Ecuador	1	—	—	1
Mexico	3	1	—	4
Greece	—	1	—	1
England	3	2	—	5
China	1	—	—	1
Luxenburg	1	—	—	1
Ethiopia	—	1	—	1
Turkey	1	2	—	3
Rhodesia	1	—	—	1
Venezuela	1	—	—	1
Philippines	3	—	—	3
Lebanon	—	1	—	1
Japan	4	1	—	5
Chile	1	—	—	1
Norway	1	1	—	2
Columbia	1	2	1	4
Sweden	2	2	—	4
Uruguay	—	1	—	1
New Zelaland	1	1	—	2
Australia	—	1	—	1
Belgium	—	1	—	1
Germany	1	—	—	1
	—	—	—	—
	47	32	1	80
Canada	28	16	—	44

Exchange List Breakdown

United States	Foreign	Canadian	Total
13	43	1	57

Advertisers — Free Copies

United States 91

S.L.T.C. Mutual Members Breakdown

England	114	South Africa	7
Australia	31	Belgium	1
New Zealand	2	Pakistan	1
Sweden	3	Egypt	2
Ireland	4		—
Scotland	4	Total	169

Foreign Subscribers Breakdown

Portugal	2	Thailand (Siam)	1
Sweden	9	South Africa	4
France	18	Switzerland	3
Peru	3	Finland	4
Argentina	7	Russia	4
New Zealand	2	Scotland	2
Holland	8	India	4
Germany	19	Israel	3
Venezuela	1	Norway	3
Australia	14	Spain	2
Brazil	6	Iraq	1
Italy	9	Czechoslovakia	3
Belgium	3	Uruguay	1
Indonesia	1	Chile	1
Denmark	2	Philippine Islands	1
Columbia	1	Yugoslovia	1
England	6	Finland	3
Japan	15		
Mexico	3	Total	170

United States Subscribers Breakdown

Ohip	3	Indiana	1
Delaware	2	Iowa	1
Massachusetts	7	Connecticut	1
Texas	1	Oregon	1
Pennsylvania	8	Missouri	3
Illinois	4	Washington	1
New York	15	Alabama	1
California	7	Kentucky	1
Michigan	3	Minnesota	2
New Jersey	4	New Hampshire	1
Maryland	1		
Georgia	1	Total	70
North Carolina	1		
Canadian Subscribers	5		

THE FIFTY FIRST ANNUAL MEETING

The Fifty First Annual Meeting was held at the New Ocean House, Swampscott, Mass., from May 22nd to 25th inclusive. It was the largest of our Annual Meetings, with over 600 registrants.

The afternoon of the twenty second was devoted to committee meetings. Throughout the past year committee activities covered many phases of leather chemistry and technology and the reports represent the results of painstaking effort. The appreciation of the Association is justly due to the committees listed.

Coordinator of Technical Committees	E. B. THORSTENSEN
I. Vegetable Leathers	A. N. KAY, *Chairman*
Tannin Analysis	A. N. KAY, "
Determination of Lignosulfonates	S. DAHL, "
Nontannins in Lignosulfonates	F. F. MARSHALL, "
Hide Powder	I. D. CLARKE, "
Tannery Practices	J. F. WAGONER, "
II. Mineral Tanned Leathers	R. S. ADAMS, "
Determination of Zirconium	J. WENDKOS, "
III. Physical-Mechanical Properties	M. MAESER, "
Physical Testing	M. MAESER, "
Fastness of Colored Leathers to Light	E. D. COMPTON, "
Water Penetration	R. M. LOLLAR, "
Sampling	C. W. MANN, "
IV. Preparatory and Post Tanning Process	W. T. RODDY, "
Fats and Oils	R. M. KOPPENHOEFER, "
V. Standards and Specifications	C. G. TELANDER, "
VI. Leather Finishes	B. ROLL, "

Committees not numbered are subcommittees under the general committees.

The President's Reception was held at five o'clock, then later in the evening committees again convened. A Council Meeting and a meeting of the Editorial Board of the Journal also took place.

The Annual Meeting opened on the morning of the twenty-third with welcoming remarks by the Convention Chairman.

REMARKS

By DOMINIC MEO

The Committee extends to all a most hearty welcome to our fifty-first annual meeting.

The program this year has all the diversification required for a well rounded program. The technical papers have been limited to twelve to allow more latitude to the authors for presentation, as well as a more liberal discussion period following each paper.

Dr. Youden, of the National Bureau of Standards, and Professor Wadsworth, of M. I. T., have been invited to present advanced theories on prepara-

tion of experiments. It should be most interesting to all charged with the task of experimentation in a tannery.

Tuesday afternoon a trip to the Lowell Technological Institute's Leather Engineering School will offer to many their first opportunity to examine this new addition to the facilities for the preparation of young men for the tanning industry.

The social program, beginning with the Presidential reception on Sunday, should satisfy all who look forward to the hours of sociability that have enriched old friendships and cemented new ones.

This year, as last, we are promoting some exhibits, which, we hope, will merit your attention.

In conclusion, your satisfaction will be ample reward for the work of your committee.

President E. S. Flinn then addressed the Convention.

PRESIDENT'S REPORT

By E. S. Flinn

Fellow members, guests and visitors. We welcome you this morning to the Fifty-first Annual Meeting of the American Leather Chemists Association. It is hoped that you will find the facilities at Swampscott most adequate. The Convention Committee, under the able direction of Mr. Dominic Meo, has assembled a program, both technical and social, that we are sure you will find rewarding and constructive.

Among us today are visitors from foreign lands and it is with particular pleasure that we greet these men who have come from the distant countries of Brazil, Japan, Cuba, Sweden, Germany, England, Australia and New Zealand. May your stay here be a profitable one.

On behalf of Council, in whose hands the stewardship of the Association rests, I would like to give an accounting of our achievements of the past year. The Association continues to show a healthy growth. This year, for the first time, we have exceeded one thousand members. The actual figure, including mutual members, stands at 1,034. The active and associate membership totals 865, which is an eighty per cent increase in the past ten years, and this stands as a definite confirmation of the faith some 23 men had for the technical future of the leather industry when they established the American Leather Chemists Association in 1903.

Financially, too, we have grown. The audited report for the fiscal year 1954 shows that our total income was $33,451., our total expenses $29,351.,

leaving a net income for 1954 of $4,100. Again, a ten year comparison is enlightening. In 1944, the total revenue was $16,968. compared with the $33,451. in 1954. Significantly, the percentage of revenue that is derived from the Journal has remained the same, at 63%, over the ten years. While the surplus balance was $19,808. in 1944, it has increased to $54,376. in 1954. Such a surplus balance can serve as a cushion against periods of economic unrest and will permit intelligent extraordinary expenditures directed toward stimulating fundamental work.

It will be well to point out here that the healthy growth and the sound financial position of the Association is due particuarly to the efforts of a few members and attests to their industry. For this we owe a debt of gratitude to the Ways and Means Chairman, Mr. O. V. Wederbrand and his predecessor Mr. John Teas, to our Secretary, Dr. Fred O'Flaherty and to our Editor, Mr. Dean Williams.

It would be unwise to measure the growth and stature of our Association in members alone. The technical accomplishments and the assistance given to the leather industry are the yardsticks of our real value. This stimulation must come from the members, who have a distinct responsibility in belonging to a technical society. It has been rewarding to observe the efforts that many of our older members have put into the investigation of methods and researches dealing with the leather industry. However, I wish to add my voice to those of your past Presidents in making a strong plea for the younger members to come forward and become associated with our technical committees. I repeat, this is one of the distinct responsibilities of belonging to a technical society and provides a definite measure of recognition to the individual.

As is inevitable, death decimates the ranks of a society and it is with a deep sense of sorrow that we record the passing, in the past year, of a mutual member Mr. A. Cheshire; Mr. L. H. Lincoln, Mr. Chas. W. Lizer, Prof. D. McCandlish, who was an honorary member, and Mr. Melvin Snider. These men contributed heavily of their efforts in the support of our Association and to them we bow heads in tribute.

The backbone of our organization is in our Technical Committee and we have seen fit this year to publish in our Annual Meeting program the names of the various committees and their membership so that you may recognize them and become better acquainted with them. Please study these committee lists carefully. In appreciation of their work we are issuing certificates to each member.

Under the direction of Mr. E. B. Thorstensen, the Coordinator of the Technical Committees, a great deal of work has been accomplished in the past year.

Initiated during the office of Dr. Koppenheofer, and pushed vigorously by Dr. Turley during his term, the entire methods booklet has been revised in a new format and the final sections of the booklet, (Physical Testing and Tannery Chemicals) should be in your hands shortly after this Annual Meeting. As you know, these Methods are being presented as provisional methods and will be voted on at the 1956 Annual Meeting to become official methods. Please do not underestimate the extent of this task of revision, and it is your definite responsibility as a member to scrutinize carefully each method and advise the chairman of the respective committee involved if a particular method should be altered prior to adoption as official.

We mentioned previously that our surplus balance was such that we could consider intelligent extraordinary expenses. During the past two years, Council has established a policy, that we hope will be continued by future Councils, of setting aside $1,000. each year to be used in conjunction with the biennial meeting of the International Union of Leather Chemists Societies, of which our Dr. Turley is currently First Vice-President. On the even year, the $1,000. is provided to permit an official delegate to attend the biennial conference. On the odd year, the $1,000. is awarded the author of an exceptional technical paper so that such paper can be presented at the International Union Conference. This year Mr. Carl G. Telander was assigned the $1,000. as official delegate to the International Union which conference will be held in Stockholm, Sweden in August of this year. Dr. Joseph R. Kanagy was selected to present his paper at the same meeting. (It must be mentioned here that, due to the excellent quality of the papers submitted, the final decision for the selection was a critical one for the committee.) Dr. Turley and Mr. Thorstensen will also attend the August conference so that the Association will have four representatives at the Stockholm meeting.

An understanding of the practical problems of tanning and leather manufacture is fundamental since it is only by recognition of the problem that solutions can be effected. Discussions at our past meetings have been very constructive and profitable, and we are deeply indebted to the combined production clubs (the Delaware Valley Tanners' Club, New England Tanner's Club, and the Tanner's Production Club of Wisconsin) for making this such an effective program. As members, you have recently received Supplement #3, covering the discussions held at Bedford Springs in 1954 and this year the entire day of Wednesday, May 25th, has been set aside for a continuance of these provocative matters. You will be remiss if you do not participate.

As an Association, we have been asked to participate in the Perkins Centennial, celebrating the 100th anniversary of his discovery of indigo in 1856. Dr. E. D. Compton is chairman of a panel that will discuss the subject "Dyes in Leather".

Continuing our custom of honoring men who have been active in the affairs of our Association for forty years, this year we shall award life membership to Mr. Raymond L. Moore and Mr. Carl Muckenhirn and the presentation of certificates will be made at the time of the Annual Banquet.

We wish to dwell briefly on the general health of the leather industry and our relationship to it. In years past, the leather industry has been a vigorous one but, today, in comparison with other industries that also can relate their economic growth with population increases, leather is in an unenviable and relatively static position. The pressure of competition from the plastics industry on the one hand and the increasing difficulty in obtaining suitable rawstock, such as for the kidskin segment of the business, on the other hand make it highly desirable to take a more careful scrutiny into the future. Much has been said, in this direction by experts and, therefore, we shall not belabor the point.

As members of our Association, we should be mindful of one of the objects as expressed in our By-Laws, namely, to promote the advancement of chemistry and other sciences, especially in regard to their application to problems confronting the leather industry. Moreover, in concert with other industries, the need of real basic research becomes obvious. Not only should basic research go forward in understanding the present processes used in making leather but new concepts should be examined thoroughly. For example, you are all aware of the development of the solvent tannage, first conceived at Freiburg, Germany in 1912, investigated further at the Tanners Council Research Laboratory in 1930 and now being examined in pilot plant operation for vegetable, mineral and synthetic tannages. Confronted, as the leather industry is, with stiff competition for its markets, basic research is an absolute necessity for progress, and, in the words of a well known company, progress is our most important product.

This is the theme I wish to leave with you today, with the admonition that you *must* sell basic research to your companies for your mutual welfare. You shall learn the truth and the truth shall make you free.

The technical papers and the Symposium on Leather Making followed in the order given below.

TECHNICAL PROGRAM

(*President Flinn Presiding*)

MORNING SESSION—MONDAY, MAY 23

9:30 a. m.—ANNUAL REPORT

by PRESIDENT EDWIN S. FLINN

10:00–10:30 a. m.—HIGH CALCIUM LIMES AND THEIR APPLICATION TO THE LEATHER INDUSTRY.
by GORDON J. WIEST, *Technicel Director*, Warner Company
(Leaders of Discussion: DONALD F. HOLLOWAY and GILBERT D. SART)

10:30–11:00 a. m.—THE CONTRIBUTION OF SOAKING ASSISTANTS TO SIDE LEATHER QUALITY
by ROBERT M. LOLLAR, *University of Cincinnati*
(Leaders of Discussion: AUGUST BOSS and BEN. A. GROTA)

11:00–11:30 a. m.—TANNING WITH EPOXY RESINS
by E. M. FILACHIONE, I. D. CLARKE, and E. H. HARRIS, JR., United States Department of Agriculture
(Leaders of Discussion: ROBERT W. LOTZ and WALLACE WINDUS)

11:30–12:00 a. m.—STUDIES OF THE CHROME-TANNING PROCESS
by EDWARD S. NAIDUS and ALICE R. BROWNE, United Shoe Machinery Corporation
(Leaders of Discussion: HAROLD G. TURLEY and E. B. THORSTENSEN)

12:00–2:00 p. m.—LUNCHEON

AFTERNOON SESSION—MONDAY, MAY 23
(EDWIN THORSTENSEN, *Presiding*)

2:00 2:30 p. m.—PHYSICAL PROPERTIES OF FAT LIQUORED AND OF SOLVENT EXTRACTED LEATHERS
by I. VICTOR MATTEI and WILLIAM T. RODDY, University of Cincinnati
(Leaders of Discussion: MALCOLM H. BATTLES and CHARLES T. CARES)

2:30–3:00 p. m.—POLYMERIZATION OF RESINS IN RELATION TO LEATHER FINISHES
by DR. HAROLD NAIDUS, MR. GEORGE KATZ, MR. MAX POTASH, Stahl Finish Company
(Leaders of Discussion: ROBERT SHAW and LOUIS E. STAHL)

3:00–3:30 p. m.—PREPARATION AND TANNING PROPERTIES OF PHENOLIC DERIVATIVES OF LIGNOSULFONIC ACID
by W. R. KENZIE, ALISON M. WILSON, and P. A. DEUTSCH, Ontario Research Foundation
(Leaders of Discussion: E. M. FILACHIONE and I. D. CLARKE)

3:30–4:00 p. m.—SILICONE TREATED LEATHER
by CHARLES DUDLEY, Dow Corning Corporation
(Leaders of Discussion: WILLARD HULTQUIST and ALFRED G. FLEISCH)

4:00–4:30 p. m.—TESTING OF VEGETABLE EXTRACTS
by R. C. PUTNAM, C. B. CRANDALL, and E. E. FACER, Jr.,
United States Testing Co., Inc.
(Leaders of Discussion: ARTHUR N. KAY and ELWOOD E. PRESLEY)

4:30–5:30 p. m.—BUSINESS MEETING

MONDAY EVENING—MAY 23
8:45–12:00 p. m.—BARN DANCE IN THE CONVENTION HALL.

MORNING SESSION—TUESDAY, MAY 24
(DR. TURLEY, *Presiding*)

9:30–10:00 a. m.—CHROMATOGRAPHIC TECHNIQUES
by JAMES M. CASSEL, National Bureau of Standards
(Leaders of Discussion: WILLIAM T. RODDY and J. R. KANAGY)

10:00–10:30 a. m.—BATING
by ROBERT L. STUBBINGS and C. DAVID WILSON
(Leaders of Discussion: JULIUS PFANMULLER and ARTHUR GOETZ)

10:30–10:45 a. m.—TRANSVERSE SHRINKAGE TESTER
by C. W. MANN and C. P. MERHIB,
Quartermaster Research and Development Center, U. S. Army
(Leaders of Discussion: ALBERT E. CHOUINARD and ROBERT STUBBINGS)

10:45–11:15 a. m.—DR. YOUDEN, NATIONAL BUREAU OF STANDARDS.
(Leaders of Discussion: ROBERT M. LOLLAR and ROBERT STUBBINGS)

11:15–12:00 a. m.—PROFESSOR WADSWORTH, M. I. T.
(Leaders of Discussion: MIETH MAESER and DAVID WILSON)

TUESDAY AFTERNOON—Golf Tournament at Tedesco Country Club and also a visit to Lowell Technological Institute. Buses will leave hotel at 1:30 p. m. for Lowell.

TUESDAY—7:30 p. m.—ANNUAL BANQUET WITH INVITED SPEAKER.

WEDNESDAY—David Wilson, Chairman of combined Tanners Production Clubs' Leather Making Committee, presiding all day session on "Leather Making." This session will terminate at 4:30 p. m.

LADIES PROGRAM

MONDAY—MAY 23, 1955

10:00 a. m.—REGISTRATION
Beginning of the "Mystery Woman Contest"

12:30—LUNCHEON

2:00-4:00—BRIDGE AND CANASTA PARTY

TUESDAY—MAY 24, 1955

10:30—PUTTING CONTEST

12:30—LUNCHEON

2:15—OLIVE HANNA-artist-graphologist-lecturer
"You and Your Handwriting"

WEDNESDAY—MAY 25, 1955

11:00—REVEALING OF "MYSTERY WOMAN"
HISTORICAL VISITS (optional)

The Barn Dance Monday evening was exceptionally well attended, and provided an excellent means for expanding one's acquaintanceship. This event is becoming a part of the Annual Meetings whenever they are held in resort hotels.

On Tuesday afternoon the Annual Golf Tournament was held. Winners of cups were as follows:—Teas Memorial, Andy Gard, tied by Jim Morrison; Senior Cup, A. J. Mahoney; P. F. Reilly Trophy, H. R. Miller; L. A. Cuthbert Memorial Cup, J. McDermot. Numerous other attractive prizes were awarded to participants in the Tournament.

Many who did not play golf visited Lowell Institute of Technology. About fifty inspected the Leather School and were much impressed with the facilities available to students in leather chemistry and technology. Dr. Chouinard, head of the school has an excellent opportunity to turn out good men for our industry. The small classes permit individual attention and instruction, thus further enhancing the value of the school.

Entertainment was provided the ladies under the leadership of Mrs. John Highberger, and her committee, which consisted of Mrs. E. S. Cavett, Mrs. Meith Maeser, Mrs. John Maloney, Mrs. Dominic Meo, and Mrs. Joseph Norton. Luncheons, bridge, canasta, putting contests and visits to historical places provided a full program for them. In a more serious vein Olive Hanna, artist and lecturer, spoke to the ladies on the subject, "You and Your Handwriting". It is fast becoming a Convention axium, that a goodly attendance by the ladies spells a large and successful Meeting.

The Annual Banquet was held Tuesday evening at which time Walter J. Murphy, editor of Chemical and Engineering News, addressed the group.

The gold prizes were presented at the conclusion of the banquet, and the Alsop and Winheim awards were made. Life Membership certificates were presented by President Flinn to Raymond L. Moore and Carl Muckenhirn. In their absence the certificates were accepted for them by C. A. Blair and O. V. Wederbrand, respectively.

PRESENTATION OF THE ALSOP AWARD

By I. C. Somerville

The Awards Committee appointed by Council for this year included Dean Williams, Jack Maloney and myself. After some deliberation we were able to make unanimous recommendations for the Alsop and Winheim Awards.

The Alsop Award is the highest honor bestowed by our Association. It is a memorial to William K. Alsop and is made available through the generosity of the River Plate Corporation. In the past it has been given either for meritorious scientific contributions in the field of leather chemistry or for outstanding service to our Association.

This year we recognize and honor one who has made his mark in both spheres, Mr. Jerome S. Rogers. In the course of forty-five years in the leather and tanning field he has been author or part-author of fifty-three papers covering a wide variety of subjects related to tanning materials, tanning processes and leather. These include improved methods for determination of components of heavy leather, investigation of wear resistance of sole leather, stabilization of leathers against acid deterioration, alum retannage of insoles for better serviceability, and exploration of potentially available domestic tannins. The difficulties inherent in this last problem are well recognized and it is encouraging that the team of research workers in the Eastern Utilization Research Branch of the Department of Agriculture, working under the direction of Mr. Rogers, has recently been able to demonstrate that satisfactory sole leather can be made using canaigre as the only tanning material. Furthermore, enough of this extract is to be made available this year for full scale tannery evaluation.

Mr. Rogers joined our Association in 1912 and has, I believe, the unique distinction of maintaining a perfect attendance record at Annual Meetings since then. He served as Councilor and Vice-President before becoming President in 1924, and was made a Life Member in 1952. He was a prime mover in formation of the Delaware Valley Tanners' Club, and became its Secretary at the first election of officers in 1946, continuing in this capacity for eight years until his retirement last year.

We honor him tonight for his numerous scientific contributions and faithful service to the Association and to the industry through a long term of years. Mr. Rogers, it is a privilege to present to you, on behalf of our Association, the Alsop Award for 1955.

JEROME S. ROGERS

ACCEPTANCE OF THE ALSOP AWARD

By JEROME S. ROGERS

Dr. Somerville, Dr. Flinn, Members of the American Leather Chemists' Association and Guests; I accept with deep humility the "William K. Alsop Award". It is a signal honor to be selected for this award. It will be especially

prized because I know that it is the highest award given by the American Leather Chemists' Association. I sincerely thank the Award Committee and the donor—The River Plate Corporation for this handsome gold watch. I shall wear it with much pleasure and unending appreciation of the esteem of my fellow workers in the American Leather Chemists' Association.

Accomplishments in research of hides, tanning materials and leather, like other types of research, are seldom if ever attained by one individual working alone. They usually involve the support provided by an organization, company or government agency, and the united efforts of coworkers. This has been particularly true in the accomplishments that have been attained in our leather research. I wish therefore to acknowledge;

(1) the excellent opportunities and facilities for tanning material and leather research that have been so generously provided by the United States Department of Agriculture in its Eastern Utilization Research Branch under the direction of Dr. P. A. Wells; and (2) the very valuable assistance and cooperation that have been so willingly given by Ira D. Clarke, Clarence W. Beebe, Edward M. Filachione, Theon C. Cordon, Fred P. Luvisi, William F. Happich, Murial L. Happich, Mary E. Hannigan, Elmer Weaver, Alfred Everett, Edward Harris and Morton Fein. These chemists and bacteriologists were my immediate coworkers at the Eastern Laboratory. Much of the valuable data obtained could not have been secured without their help. Thus I feel that the Laboratory and all of my coworkers in leather research share in the honor that this award represents.

Tonight we are again honoring the memory of Wm. K. Alsop and in doing this it may be well to recall some of his pioneering chemical activities related to tanning materials, leather and the work of our Association. As you may know the American Leather Chemists Association was an outgrowth of the Association of Official Agricultural Chemists of the United States Department of Agriculture. Early studies of methods for the determination of tannin were made by Krug, Westenfelder, Yocum, Haley and Carr.

Mr. Alsop, after completing with honor his chemical studies at Haverford College in 1896, became chief chemist for the United States Leather Company at Ridgway, Pa. In U. S. D. A. Bulletin 56 (1898) John Yocum, the Referee on Tannin, reported results obtained by Mr. Alsop showing that filter paper and kaolin both absorbed tannin from the ana'ysis solution. These facts are given consideration in our present methods of tannin analysis. In these studies hide powder prepared at Ridway, Pa. was used and compared favorably with the Vienna product. As you know the Standard American Hide Powder was developed and produced for many years at the Ridgway Laboratory.

Much important work dealing with development of our methods of tannin analysis was conducted by those early leather chemists and recorded in bulletins of the United States Department of Agriculture prior to the formation of the A.L.C.A. and the publication of the first issues of its journal.

Early in the Association's history Mr. Alsop was made Secretary-Treasurer (1905-1908). He served on the Council and was president 1912-1914. He was Editor of our Journal for 26 years, (1910-1936). In the January, 1920 issue of the Journal Mr. Alsop published almost all of the experimental collaborative work of the leather chemists that had been published in the proceedings of the annual conventions of the A.O.A.C. Thus, by assembling these data which were not readily available to leather chemists, he made it possible for members of our Association to review and become familiar with those early investigations that developed the groundwork for the formation of A.L.C.A.

It was my privilege to be personally associated with Mr. Alsop on committees, the council and while holding official positions in the Association. I was always deeply impressed by the thoroughness of his studies, the completeness of the data that he obtained, his keenness in interpreting results and the wealth of his practical experience in the leather field. Our Association can well be proud to honor his memory.

PRESENTATION OF THE WINHEIM AWARD

By I. C. Somerville

The Winheim Award was established in 1951 to honor the memory of Ade Winheim. It is given biennially to the student presenting the best paper directly related to the leather industry. The Awards Committee reviewed a number of meritorious papers presented or published in the last two years and has selected one based on work carried out at the Tanners' Council Research Laboratory at Cincinnati. It gives me great pleasure to present the Winheim Award to Mr. William K. Schweitzer, Jr. for his paper published last year in our Journal, "A Study of the Mechanism of Leather Dyeing".

ACCEPTANCE OF THE WINHEIM AWARD

By W. K. Schweitzer

Dr. Somerville, Members of the American Leather Chemists' Association, Ladies and Guests, it was with a great deal of surprise and pleasure that I received notification that I was to be the third recipient of the Winheim Award. I want to sincerely thank you for this honor.

I would also like to take this opportunity to express my thanks to the Tanner's Council of America, whose generous financial support made this work possible. Without such modern facilities as the Leather Industry has provided on the Cincinnati Campus, this work certainly would not have been accomplished. The encouragement and assistance of Dr. Lollar, Dr. O'Flaherty, Mr. Roddy and the other staff members at that Laboratory provided the inspiration that assured successful completion of our project. However, as you are all aware, this has been only one of their many important contributions to leather technology. I've certainly benefited by being associated with them.

In closing, I would again like to express my apprecation to the American Leather Chemists' Association for this honor.

Wednesday was given over wholly to the Symposium on Leather Making, sponsored by the New England, Delaware Valley and Wisconsin Production Clubs. These discussions by the practical tanners have become well established as a part of our Annual Meetings since they definitely tend to unite the tanner and the chemist in a mutual interest.

At the Council Meeting, held Wednesday morning, the new members Robert Stubbings, Robert G. Weldon and E. D. Compton attended. It was also announced that the Annual Meeting next year will be held at the Grand Hotel, Mackinac Island, Michigan, June 17-20.

To Dominic Meo, Chairman, his able assistants, L. E. Meyers, Ralph E. Nelson, Mrs. John Highberger and H. D. Sentkowski, and to President E. S. Flinn and Secretary F. O'Flaherty, belong the credit for making The Fifty First Annual Meeting the largest and most successful one held to date.

MINUTES OF THE EDITORIAL BOARD MEETING

Swampscott, Mass.

May 22, 1955

Present:—

Dean Williams, *Editor*	J. H. Highberger
R. B. Hobbs	H. B. Merril
F. O'Flaherty	R. E. Porter
H. G. Turley	R. H. Twining, *Asst. to the Editor*

Several months previous to the meeting each member of the board was notified of the meeting to be held at the time of the annual convention and

requested to submit suggestions or criticisms looking toward improvement of the Journal or expansion of its functions. As a result of this inquiry a number of ideas were brought to the meeting and formed the basis for the board's discussion.

The problem of lack of papers for the Journal was discussed at length. It was agreed that presentation of papers at the Annual Convention is one of the best means for encouraging the writing of papers and ensuring their publication. Without this incentive, which enforces a definite time for completion, there is likely to be continued delay resulting in eventual failure to produce a paper. The recently introduced practice of devoting an entire day to round table discussion of practical tanning problems, however meritorious, has resulted in a necessary reduction in the number of papers presented, with consequent dropping off of material for publication. Three possible means for meeting this problem were suggested:—

1. Increase the meeting to four days.
2. Have some papers presented with title and abstract only.
3. Hold simultaneous sessions so that more than one paper can be given at a time. This is common practice for societies holding large meetings.

It was suggested that this matter be brought to the attention of Council.

The question of the Board's becoming a publicity agency, appropos of a suggestion made in Council meeting, was discussed. It was the consensus that such an activity is entirely foreign to the purpose of the Board. To do the job right would require the addition of a full time man to the editorial staff, which, it was felt, could not be considered. It was decided to drop the matter unless emphasis is placed on it by Council.

It was brought out that all papers should be in reasonably good shape for publication when presented to the Board for review. If not in such condition, they should be corrected for poor English and an incorrect format before publication. It developed that this is already standard practice, but, especially in the case of foreign authors, it is sometimes difficult to know just how far to go without danger of changing the author's meaning. It was decided that, to improve this situation, the editor should periodically publish, in the Journal, a set of directions for authors. Included in these instructions should be a request that an abstract of the article, prepared by the author, be placed at the beginning of the article.

An inquiry into the cost of colored plates by the Princeton Polychrome Process had elicited no definite figures. It was decided not to follow it further at present.

It was decided that the date of joining the Association and the latest company affiliation be included with the names of deceased members in the annual necrology record.

In closing it was agreed that a Board meeting should be held at the time of each Annual Convention.

DEAN WILLIAMS, *Editor*

MINUTES OF THE VEGETABLE LEATHER COMMITTEE

A meeting of the Vegetable Leather Committee was held at the New Ocean House, Swampscott, Mass., on May 22, 1955. The meeting was called to order at 4:50 P.M. by Chairman Kay, with the following present: *Members*, I. D. Clarke, S. Dahl, H. R. Miller, G. W. Schultz, and J. F. Wagoner. Mr. G. V. Downing was represented by L. M. Whitmore. *Guests*, J. H. Davis, J. Naghski, J. S. Rogers, C. A. Blair, F. F. Marshall, R. H. Tayler, J. R. Kanagy, J. M. Cassel, E. F. Mellon, and W. M. Parker.

The business of the meeting was confined largely to a review of the Provisional methods as now published. Since these are scheduled to become Official methods in 1956, it was desirable to include any necessary refinements and changes at this time. In the matter of compositing samples (Method B-1) on the basis of "weight" or "area", the Committee went on record as opposing the change from "area" to "weight", and therefore the method will stand as it is now published. J. H. Davis reported on the effect of different diameter weighing bottles in the determination of moisture in leather and suggested that a standard size be included in the Methods. There appeared to be some discrepancy on this point as Mr. E. L. Wallace had advised Chairman Kay that the height of the weighing bottle also had a bearing on the results. G. W. Schultz was of the opinion that the whole method of determining moisture in leather should be subjected to review. He reported on some recent collaborative work among several laboratories and quite large discrepancies were obtained in the moisture determination. C. A. Blair and F. F. Marshall agreed to make a study on the differences obtainable between using the Alsop Evaporator and Drying oven compared with an electric convection-type oven. It was the consensus of opinion of the Committee that the results obtained on the Alsop oven should be used as the Standard and necessary changes in time and temperature when using an electric convection-type oven should be established. Chairman Kay suggested that they also investigate the use of metal containers versus glass weighing bottles. The Method will be withheld pending the results of this committee work.

Considerable discussion was held on the determination of "material extractable by chloroform", Method B-4. Chairman Kay appointed a sub-

committee consisting of C. A. Blair, Chairman, I. D. Clarke and H. R. Miller to study the effect on this determination when using a Soxhlet extractor and when using the ASTM condenser equipment. This Method will also be withheld until the study of the sub-committee can be completed. The Meeting was adjourned at 6:30 P.M. until 9:00 P.M.

The second portion of the meeting began with a discussion of the Nitrogen determination (Method B-5) relative to size of sample, color of the mixed indicator endpoint, etc. It was agreed that since no one was using the standard acid for collection purposes that this alternative method be dropped from the Method. This leaves the collection in Boric acid as the one method. S. Dahl advised that the National Bureau of Standards has available a Standard Nitrogen-Free Sucrose for use in determining the Blank in the nitrogen determination. It was pointed out that the Method for Magnesium as Epsom Salts (Method B-16) in leather has both a gravimetric and a volumetric method for the determination. Since both methods are in use, no action was taken.

Chairman Kay pointed out the advisability of using three Buffer solutions when setting up the pH meter for determining a pH value. By setting the pH instrument at a pH value of 4.0 and then checking it at 3.0 and 5.0, one can be assured that the meter is working properly and thus avoid unintentional errors. It was agreed that Mr. Kay should rewrite the method along these lines and subject it to Committee opinion.

By unanimous vote it was agreed to delete the Procter-Searle determination (Method B-21) from the Methods. The following changes were also agreed upon in the Report of Analysis (Method B-30): Change "Petroleum Ether Extract" to read "Solvent Extraction....."; the name of the solvent used to be inserted. The "Soluble Nontannin" and "Uncombined Tannin" to be interchanged on the Report with "Water Soluble Material".

There being no further business, the Meeting adjourned at 11:30 P.M.

J. F. WAGONER
Acting Secretary

MINUTES OF TANNIN ANALYSIS COMMITTEE MEETING

A meeting of the Tannin Analysis Committee was held on May 22, 1955 at the New Ocean House, Swampscott, Mass. The meeting was called to order at 2:00 P. M. by Chairman A. N. Kay, with the following present: *Members*, R. E. Barnwell, T. C. Blair, J. H. Davis, E. Facer, F. P. Luvisi, F. F. Marshall, E. L. Rayfield, G. W. Stanbery, S. Dahl, D. Williams, I. D. Clarke, C. G.

Telander, and J. F. Wagoner. G. V. Downing was represented by L. M. Whitmore. *Guests*, R. L. Young, J. M. Hinkle, C. A. Blair, J. M. Naghski, M. Happich, J. R. Kanagy, and G. W. Schultz.

Chairman Kay reported that a new lot of kaolin had been tested and approved by the Hide Powder Committee. It is identified as Batch No. 9498 and is available from A. H. Thomas Company, Philadelphia, Penna. This report will be submitted to Council for final approval. On a motion by I. D. Clarke, seconded by G. W. Stanbery, the testing of future lots of kaolin is to be part of the duties of the Hide Powder Committee. The motion carried unanimously. F. F. Marshall then presented the report of the Sub-Committee on the Effect of Time of Delay before Pouring on Non Tan Solutions. This work referred specifically to lignosulfonates and was conducted by three of the five members of the sub-committee. The report indicated that there were fairly negligible differences obtained by delaying the start of the non tan determination by as much as an hour. After considerable discussion, it was agreed that the report be accepted and published in the Journal as a matter of record. It was further agreed that no change in the existing wording of the method should be recommended.

Mr. S. Dahl reported on the work of his Sub-Committee on the Determination of Lignosulfonates in an Extract Blend. Six laboratories collaborated in examining four different lignosulfonate vegetable extract blends. While their report is not completely compiled, Mr. Dahl stated that a quantitative method using cinchonine sulfate is feasible and they will be ready to recommend it as a Provisional method. Chairman Kay requested that Mr. Dahl submit the report to all members of the committee for comments. It will then be attached to the report given last year by E. L. Rayfield and published in the Journal.

Several of the Provisional methods as now published were discussed with the view of clarification before they become Official methods, which is scheduled for 1956. F. F. Marshall pointed out that Method A-60 does not provide for reporting moisture. It was also agreed that it would be agreeable to report both specific gravity and degree Twaddell if so desired. The form for reporting extracts is to be revised to include above items. T. C. Blair and E. Facer brought up for discussion Method J-10 dealing with the Sampling of Vegetable Tanning Materials, and Method A-11, Preparation of Extracts for Analysis. After considerable discussion, it was agreed that the methods need rewriting for clarification. Therefore, Chairman Kay appointed the following to serve as a sub-committee to rewrite the method: T. C. Blair, Chairman, E. Facer, E. L. Rayfield, D. Williams, G. W. Stanbery, and J. F. Wagoner. A definite size for the mortar and pestal used in crushing solid extracts is to be included. The method will be withheld until report from above committee is received. There followed a discussion as to size of sample

for liquid extracts. The present specified size is four ounces, but this is insufficient if a specific gravity determination is desired since that portion of the sample used for specific gravity cannot be returned to the original sample. While no definite decision was reached, it was felt that in those cases where larger samples were desired, they could be requested from the supplier.

The meeting adjourned at 4:15 p. m.

J. F. WAGONER, *Acting Secretary.*

REPORT OF THE SUBCOMMITTEE INVESTIGATING NONTANNINS IN LIGNOSULFONATES

The Tannin Analysis Committee having been advised of a change which occurs in the non-tannins of lignosulfonates, if there is a delay in pouring the tannin solution onto the hide powder, has appointed this sub-committee to investigate the extent of this change.

Procedure: Follow the Official Methods of The A.L.C.A. (A 22) in all detail, excepting in the indicated time lapses as herein set forth. Prepare two liters of each of the three lignosultonate extracts being sent you, cool over night according to the Official Methods for extracts. Prepare sufficient hide powder for twenty four non-tannin determinations, and for two moistures. Take one moisture determination at the start of the outlined tests and one at the end.

As soon as the hide powder has been squeezed to proper moisture weight, mixed and fluffed:

1: Weigh out six lots into shaker bottles, add the tannin solutions from the three lignosulfonates (duplicate determinations) and proceed with the determinations. No delay.

2: Three minutes after starting the shaker weigh out a second lot of six hide powders. Hold for five minutes, then add the tannin solutions. These should be ready to place in the shaker when the first six are removed, and represent a five minute delay.

3: Weigh out six lots of hide powder into bottles, stopper and hold for twenty minutes from the time of weighing out. Then pour on the tannin solutions. This will represent a thirty minute delay.

4: One hour after starting the first test above, weigh out six lots of hide powder from the mass, which has been held under cover to limit the moisture loss in as far as possible, pour on the tannin solutions at once. This represents one hours delay in mass.

It is also desirable to determine the extent of change occurring in blends of extracts containing lignosulfonates. You have been furnished with three samples of extracts which are fifty per cent blends of the above lignosulfonates and fifty per cent bisulfited quebracho, hence on a second day repeat the above determinations using the blended extracts.

F. F. MARSHALL, *Chairman.*

Received June 22, 1955.

REPORT OF THE COMMITTEE ON LIGNOSULFONATES

Investigation of the differences caused by delay in pouring the tannin solutions onto the hide powder.

TABLE No. 1 (LIGNOSULFONATE No. 1)

	Poured Immediately—No delay			Differences	
	1	2	Avg.	Individual	Group
H. A. Nordstrom.....	20.17	20.19	20.18		
A. N. Kay.....	20.75	20.74	20.75		
N. F. Marshall.....	20.71	20.79	20.75		
		Average of three	20.56		
	5 minute delay				
	1	2	Avg.		
H A. Nordstrom.....	20.16	20.14	20.15	—.03	
A. N. Kay.....	20.91	20.68	20.80	+.05	
N. F. Marshall.....	20.75	20.84	20.80	+.05	
		Average of three	20.58		+.02
	30 minute delay				
	1	2	Avg.		
H. A. Nordstrom.....	20.26	20.13	20.20	+.02	
A. N. Kay.....	21.02	20.85	20.92	+.17	
N. F. Marshall.....	20.81	20.74	20.78	+.03	
		Average of three	20.63		+.07
	Fresh from bulk, but 60 minutes after mixing				
	1	2	Avg.		
H. A. Nordstrom.....	20.18	20.43	20.31	+.13	
A. N. Kay.....	20.83	20.83	20.83	+.08	
N. F. Marshall.....	20.95	20.91	20.93	+.18	
		Average of three	20.69		+.13

TABLE No. 2 (LIGNOSULFONATE No. 2)

	Poured immediately—No delay			Differences	
	1	2	Avg.	Individual	Group
H. A. Nordstrom.....	23.10	23.08	23.09		
A. N. Kay.....	23.07	23.07	23.07		
N. F. Marshall.....	23.45	23.46	23.46		
		Average of three	23.21		
	5 minute delay				
	1	2	Avg.		
H. A. Nordstrom.....	23.03	23.10	23.07	—.02	
A. N. Kay.....	23.15	23.15	23.15	+.08	
N. F. Marshall.....	23.55	23.65	23.60	+.14	
		Average of three	23.27		+.06
	30 minute delay				
	1	2	Avg.		
H. A. Nordstrom.....	23.23	23.18	23.21	+.12	
A. N. Kay.....	23.26	23.28	23.27	+.20	
N. F. Marshall.....	23.58	23.58	23.58	+.12	
		Average of three	23.35		+.14
	Fresh from bulk, but 60 minutes after mixing				
	1	2	Avg.		
H. A. Nordstrom.....	23.37	23.28	23.33	+.24	
A. N. Kay.....	23.20	23.26	23.23	+.16	
N. F. Marshall.....	23.65	23.65	23.65	+.19	
		Average of three	23.40		+.19

TABLE No. 3—(LIGNOSULFONATE No. 3)

	Poured Immediately—No delay			Differences	
	1	2	Avg.	Individual	Group
H. A. Nordstrom.....	60.37	60.10	60.24		
A. N. Kay.....	62.21	62.21	62.21		
N. F. Marshall.....	61.39	61.14	61.27		
		Average of three	61.24		
	5 Minute delay				
	1	2	Avg.		
H. A. Nordstrom.....	60.17	60.00	60.09	—.15	
A. N. Kay.....	61.66	61.97	61.82	—.39	
N. F. Marshall.....	61.46	61.73	61.65	+.38	
		Average of three	61.19		—.05
	30 Minute delay				
	1	2	Avg.		
H. A. Nordstrom.....	60.41	60.29	60.35	+.11	
A. N. Kay.....	62.32	62.25	62.29	+.08	
N. F. Marshall.....	62.17	62.30	62.24	+.97	
		Average of three	61.63		+.39
	Fresh from bulk, but 60 minutes after mixing.				
	1	2	Avg.		
H. A. Nordstrom.....	60.86	60.55	60.71	+.47	
A. N. Kay.....	62.59	62.64	62.62	+.41	
N. F. Marshall	61.86	61.81	61.84	+.57	
		Average of three	61.72		+.48

DETERMINATIONS MADE ON MIXTURES OF QUEBRACHO AND LIGNOSULFONATES

TABLE No. 4—(50% QUEBRACHO + 50% LIGNOSULFONATE No. 1)

	1	2	Avg.	Differences Individual	Group
H. A. Nordstrom.....	13.22	13.23	13.23		
A. N. Kay.....	14.05	14.18	14.12		
N. F. Marshall.....	14.02	13.93	13.98		
		Average of three	13.78		
		5 Minutes delay			
	1	2	Avg.		
H. A. Nordstrom.....	13.29	13.26	13.28	+.05	
A. N. Kay.....	14.18	14.10	14.14	+.02	
N. F. Marshall.....	13.96	13.89	13.93	—.05	
		Average of three	13.78		.00
		30 Minute delay			
	1	2	Avg.		
H. A. Nordstrom.....	13.27	13.22	13.25	+.02	
A. N. Kay.....	14.37	14.33	14.35	+.23	
N. F. Marshall.....	13.93	14.01	13.97	—.01	
		Average of three	13.86		+.08
		Fresh from bulk, but 60 minutes after mixing			
	1	2	Avg.		
H. A. Nordstrom.....	13.35	13.38	13.37	+.14	
A. N. Kay.....	14.45	14.34	14.40	+.28	
N. F. Marshall.....	14.03	13.93	13.98	.00	
		Average of three	13.92		+.14

TABLE No. 5—(50% QUEBRACHO + 50% LIGNOSULFONATE No. 2)

	Poured immediately—No delay			Differences	
	1	2	Avg.	Individual	Group
H. A. Nordstrom.....	15.37	15.37	15.37		
A. N. Kay.....	16.22	16.29	16.26		
N. F. Marshall.....	16.15	16.22	16.19		
		Average of three	15.94		
		5 Minute delay			
	1	2	Avg.		
H. A. Nordstrom.....	15.39	15.44	15.42	+.05	
A. N. Kay.....	16.28	16.30	16.29	+.03	
N. F. Marshall.....	16.08	16.04	16.06	—.13	
		Average of three	15.92		—.02
		30 Minute delay			
	1	2	Avg.		
H. A. Nordstrom.....	15.46	15.47	15.47	+.10	
A. N. Kay.....	16.49	16.51	16.50	+.24	
N. F. Marshall.....	15.97	16.07	16.02	—.17	
		Average of three	16.00		+.06
		Fresh from bulk, but 60 minutes after mixing.			
	1	2	Avg.		
H. A. Nordstrom.....	15.59	15.52	15.56	+.19	
A. N. Kay.....	16.63	16.63	16.63	+.37	
N. F. Marshall.....	16.21	16.21	16.21	+.02	
		Average of three	16.13		+.19

TABLE No. 6—(50% QUEBRACHO + 50% LIGNOSULFONATE No. 3)*

	Poured immediately—No delay			Differences	
	1	2	Avg.	Individual	Group
H. A. Nordstrom.....	18.40	18.40	18.40		
A. N. Kay.....	19.41	19.34	19.38		
N. F. Marshall.....	19.58	19.54	19.56		
		Average of three	19.11		
	5 Minute delay				
	1	2	Avg.		
H. A. Nordstrom.....	18.43	18.49	18.46	+.06	
A. N. Kay.....	19.31	19.44	19.38	.00	
N. F. Marshall.....	19.53	19.59	19.56	.00	
		Average of three	19.13		+.02
	30 Minute delay				
	1	2	Avg.		
H. A. Nordstrom.....	18.48	18.44	18.46	+.06	
A. N. Kay.....	19.45	19.64	19.55	+.17	
N. F. Marshall.....	19.54	19.54	19.54	—.02	
		Average of three	19.18		+.07
	Fresh from bulk, but 60 minutes after mixing.				
	1	2	Avg.		
H. A. Nordstrom.....	18.48	18.52	18.50	+.10	
A. N. Kay.....	19.72	19.78	19.75	+.37	
N. F. Marshall.....	19.70	19.72	19.71	+.15	
		Average of three	19.32		+.21

*Water added to make a workable mixture.

TABLE No. 7 SUMMARY OF DIFFERENCES. SHOWING INCREASES IN PERCENT NON-TANNINS

	After 5 minutes delay			
Lignosulfonate	1	2	3	Average increase
H. A. Nordstrom.....	+.03	—.02	—.15	
A. N. Kay.....	+.05	+.08	—.39	
N. F. Marshall.....	+.05	+.14	+.38	
Average of three.....	+.04	+.07	—.04	+.02
	After 30 minute delay			
Lignosulfonate	1	2	3	
H. A. Nordstrom.....	+.02	+.12	+.11	
A. N. Kay.....	+.17	+.20	+.08	
N. F. Marshall.....	+.03	+.12	+.97	
Average of three	+.07	+.15	+.39	+.20
	Fresh from bulk, but after 60 minute delay.			
Lignosolfunate	1	2	3	
H. A. Nordstrom.....	+.13	+.24	+.47	
A. N. Kay.....	+.08	+.16	+.41	
N. F. Marshall.....	+.18	+.19	+.57	
Average of three	+.13	+.20	+.48	+.27

Mixed Extract—50% QUEBRACHO + 50% LIGNOSULFONATE

	After 5 Minutes delay			Average Increase
Lignosulfonate	1	2	3	
H. A. Nordstrom.....	+.05	+.05	+.06	
A. N. Kay.....	+.02	+.03	.00	
N. F. Marshall.....	—.05	—.13	.00	
Average of three	+.01	—.02	+.02	.00
	After 30 minute delay			
Lignosulfonate	1	2	3	
H. A. Nordstrom.....	+.02	+.10	+.06	
A. N. Kay.....	+.23	+.24	+.17	
N. F. Marshall.....	—.01	—.17	—.02	
Average of three	+.08	+.06	+.07	+.07
	Fresh from bulk, but after 60 minute delay			
Lignosulfonate	1	2	3	
H. A. Nordstrom.....	+.14	+.19	+.10	
A. N. Kay.....	+.28	+.37	+.37	
N. F. Marshall.....	.00	+.02	+.15	
Average of three.....	+.14	+.19	+.21	+.18

	Hide Powder Moisture			
	1st day		2nd day	
	Start	Finish	Start	Finish
H. A. Nordstrom.....	73.03	73.04	73.11	73.17
A. N. Kay.....	72.82	72.46	72.85	72.30
N. F. Marshall.....	72.63	72.60	73.50	73.30

REPORT OF THE MINERAL TANNED LEATHERS COMMITTEE

The Mineral Tanned Leathers Committee has completed the work on chrome determinations and has obtained acceptable results between laboratories.

Our next project is determining Lehigh basicity comparisons between laboratories. A series of leather samples will be sent out beginning the first week in June. Determinations on various types of leather have been planned. We have enough work ahead to probably keep us busy for another year.

R. S. Adams, *Chairman.*

Received June 3, 1955.

REPORT OF THE PHYSICAL AND MECHANICAL PROPERTIES COMMITTEE

MAY 22, 1955

MIETH MAESER, *Chairman*

A meeting of the Physical Testing Committee and sub-committees was held at 3:00 P. M., Sunday, May 22, 1955 at the *New Ocean House*, Swampscott, Mass. The following members and guests were present:

Members: I. D. Clark, Hans Heimisegger, J. R. Kanagy, Robert M. Lollar, Charles W. Mann, Eno G. Railo, William T. Roddy, Jerome S. Rogers, Robert Shaw.

Non-Members: R. G. Ashcraft, Malcolm Battles, N. Clifford Benrud, G. Arthur Brown, Edward M. Filachione, William F. Happich, Jr., C. Paul McKee, E. T. Mellon, Carl G. Telander, George H. von Fuchs.

A report of the activities of the "Water Penetration" Sub-committee was presented by Dr. Lollar, Chairman. This report is submitted as a part of these minutes. After a good deal of discussion of the Water Penetration tests, it was decided that attempts would be made to develop a means of automatically detecting the end point of the test and that the next work of the sub-committee would be the evaluation of the various methods of end point detection which were suggested. When a satisfactory method of detecting the end points has been determined for the Maeser machine, a comparative evaluation of the Dow Corning and Maeser machine will be made.

The Sub-committee for "Fastness of Colored Leathers to Light" made no formal report. The chairman, Dr. Compton, was not at the meeting, but members who were present assured the committee that work was underway and presented a brief review of the difficulties which have been found in the methods and fadometers which are available for this test.

After the meeting was over, Dr. Compton showed the chairman a report which is being prepared for the upholstery group. It is hoped that this group and the ALCA can develop a single method which is satisfactory for both groups.

The "Sampling" Sub-committee reported that it had received only one criticism of the sampling methods. This criticism pertained to a disagreement between our methods and those of the Federal Specifications Board. The matter is being considered and agreement is expected to be reached.

MIETH MAESER, *Chairman*,
Research Division
United Shoe Machinery Corp.

REPORT OF THE PHYSICAL AND MECHANICAL PROPERTIES COMMITTEE SUBCOMMITTEE ON WATER PENETRATION

May 22, 1955

Robert M. Lollar, *Chairman*

The sub-committee was requested to investigate the inherent variation of the dynamic water penetration method, P31, and to determine the influence of a speed increase of a two-fold magnitude (90 r.p.m. to approximately 200 r.p.m.). This sub-committee under Dr. Lollar's chairmanship, was to include Messrs. Kanagy, Clarke, Mann and Maeser. Since the formation of the Committee, Mr. Bernard Roll has been added to the Committee because the anticipated program required another Maeser machine.

The sub-committee's first responsibility was the selection of an experimental plan. The chairman proposed a plan where a statistical block was to be a piece of leather 15 by 12 inches in size. Dr. Kanagy proposed an alternate plan because his experience indicated large area-wise variability. This proposal seemed entirely acceptable to the sub-committee.

The chairman then turned to the question of the selection of the leather to be tested. It was felt that three levels of water repellency should be considered to secure evidence on certain information available to the chairman. First, Mr. Mann indicated that the standard deviation for the flexes to penetration on untreated leather was 100, while the same value for highly resistant leathers was 1,000 or more. Further, industry experience suggested that maximum leather variability was encountered at intermediate levels of resistance to water penetration. Therefore, it was decided to use three levels of resistance, i. e., untreated leather, treated leather expected to penetrate at 5 to 10 thousand flexes, and very resistant leather, perhaps 30,000 flexes to penetration. To date, it has proven impossible to secure sufficiently reproducible results from leathers of intermediate resistance for the chairman to be willing to proceed with the evaluation of the test. The reasons for this will be more evident from some results to follow.

In the meantime, the use of water resistant leathers has progressed commercially, and commercial testing to a specification level is developing. These leathers must exceed 15,000 flexes without penetration. Further, it seems probable that this development will cause industrial use of an electrical method of endpoint detection, since it is scarcely feasible to watch water penetration tests for 150 or 75 minutes, depedent on the rate of flexing, for such testing. This may lead to the industrial use of the Dow-Corning tester. Mr. Maeser has developed a tentative electrical circuit design to permit electrical detection of the end point on his machine.

It seems unwise at this time to proceed with the original program of evaluation. It is recommended:

a – The Maeser machine and the Dow-Corning machine should be comparatively evaluated.

b – Electrical methods of end point detection on the Maeser machine should be developed for the Maeser machine if it is to be used on the evaluation of highly resistant leathers.

To secure some information on the original question assigned to the committee, the Tanners' Council Laboratory has conducted some experimental work. We find that for leather which penetrates between 100 and 6,000 flexes and average standard deviation of about 950 results. This generally would confirm Mr. Mann's value. For untreated leather, our experience is insufficient to make a positive estimate very precise, but we would feel that Mr. Mann's value of 100 is realistic. These results were secured from blocks of silicone-treated leather as small or smaller than the 15 by 12 inch block originally proposed for the evaluation of the water penetration tests; many

Sample Number	Seconds to Penetrate		Sample Number	Flexes to Penetrate	
	88 r.p.m.	200 r.p.m.		88 r.p.m.	200 r.p.m.
1	863	222	1	1269	740
	411	336		602	1120
2	6518	1803	2	9581	6010
	5108	1431		7509	4770
3	28	40	3	41	133
	25	42		37	140
4	6241	1189	4	9174	3963
	2447	2695		3597	8983
5	3612	>3000	5	5310	>10,000
	2963	3574		4355	11,913
6	4831	>3000	6	6902	>44,217
	268*	>13,265		394*	>44,217

*Defect in leather

Sample Number	Flow, Grams at 10,000 Flex		Sample Number	% Absorption at 10,000	
	88 r.p.m.	200 r.p.m.		88 r.p.m	200 r.p.m
1	2.7	——	1	90.0	70.8
	12.3	8.9		81.3	62.9
2	00.05	— —	2	38.2	18.5
	0.24	0.14		15.9	19.3
3	89.2	——	3	96.0	82.7
	108.3	26.2		78.5	52.0
4	0.12	——	4	27.4	14.1
	0.36	0		19.3	13.6
5	0.24	0	5	15.9	9.0
	0.33	0		12.0	8.8
6	0.16	0	6	19.7	12.0
	1.11*	0		29.3*	——

*Defect in leather.

of the results were secured from sets of 4 specimens with a common corner. Hence, they seem to present the minimum leather variability combined with the inherent test variability. The average value of the flexes for penetration in all of these tests was only 1375, so that we have thus secured an average coefficient of variation of about 70 per cent. We have examined so few leathers requiring more than 5000 flexes for penetration that it is not wise to express an error term for the higher resistance levels.

To secure some evidence on the influence of the speed of flexing on the water resistance of the leather, we have secured the data in the attached table. The variability of the data makes it impossible to draw final conclusions from these data, but it seems possible that:

a – There is both a time and a flexing effect in the water penetration test. Thus, the fast rate of flexing may lower the rate of flow and the water absorption at a fixed number of flexes.

b – Very good leathers will look good at either speed, and very bad leathers will look poor at either speed. However, exact coincidence of the cycles to penetrate can only be determined by a large scale experiment. For instance, we can calculate that if the error for cycles to penetrate which we have noted earlier applies, 9 replicates at each speed would be required to prove a difference of 1000 cycles to be real.

ROBERT M. LOLLAR, *Chairman,*
Tanners' Council Research Lab.
University of Cincinnati.

REPORT OF OILS AND FATS SUBCOMMITTEE MINUTES OF MEETING

MAY 22, 1955

Those in attendance at the meeting were: B. A. Grota, Jr., Fred Rueping Leather Co.; Robert Hague, Reilly-Whiteman-Walton Co.; R. M. Koppenhoefer, Socony Mobil Oil Company, Inc.; M. R. Leach, Socony Mobil Oil Company, Inc.

The following points were discussed:

1. The status of the various leathers which have been chosen for analysis as follows:
   (a) Calf Skin Upper—(The Ohio Leather Co.)—Sample now being analyzed.
   (b) Work Shoe Upper—(S. B. Foot Tanning Co.)—Sample sent to members.

(c) Chrome Vegetable Retan Upper—(Fred Rueping Leather Co.)—Samples have been sent to members.
(d) Chrome Glove—(Wolverine Tanning Co.)—Sample being procured.
(e) Suede Leather—Quilon Treated—Sample to be procured.
(f) Suede Leather—Silicone Treated—Sample to be procured.
(g) Suede Leather—Wax Emulsion Treated—Sample to be procured.
(h) Vegetable Bag or Strap Leather—Sample not yet procured.

Other types of leather which have been suggested for study include the new washable glove leather, Bavon treated leather, conventional sole leather, and silica tanned leather. No decision will be reached to include these leathers in the analysis until there has been an opportunity to study the results of samples (a) through (h).

2. The following details of the producedure were discussed:
   (a) *Solution of dye*—Several members noted the excessive solution of dyestuff with sample (a) on using chloroform. If this persists with other types of leather, the method, which has official ALCA status may require some study to obtain correction for dissolved dye.
   (b) It was also noted that the extraction of the hydrolysate with ethyl ether may dissolve some vegetable tannin, particularly in the presence of water. If this problem persists, a special study will be required to correct the method for this dissolved tannin. This may require re-solution in anhydrous ether, followed by filtration, drying and weighing.
   (c) The group agreed to continue with alkali digestion using reflux under a slow boil. An air condenser is preferred. The rate of boiling should be sufficient to just provide for a slow condensation of steam. It was agreed to eliminate digestion on the steam bath from future analysis. The purpose of the slow boiling is to eliminate the formation of foam which caused trouble in some instances.
   (d) Some difficulty was had with the removal of water from the fatty extracts prior to weighing. It was recommended that 10 cc. of absolute alcohol be used, if necessary, to remove last traces of water prior to drying and weighing. Air blowing during drying should be avoided.
   (e) A discussion was held on the correction of the combined oil weight for loss of glyceride. No decision was reached as yet as to how this matter should be handled, and we would appreciate comments of members on this point.

3. Possible dangers in the use of ethyl ether due to the formation of peroxide was discussed. It was pointed out that the build-up of peroxides in ethyl ether is particularly hazardous. To reduce the danger, many labora-

tories insist on brown glass bottles and on the use of an iron strip in the ether. For a full discussion of this subject refer to the "Kirk-Othmer Encyclopedia of Chemical Technology, Vol. 5, page 868.

RESULTS OBTAINED TO DATA ON ANALYSIS OF CALF UPPER LEATHER

	Moisture		CC14 Extractable		Total Oil by Steam		Total Oil by Reflux	
Socony	11.56		4.18		4.25		4.48	
	11.66	(11.61)	4.21	(4.19)	4.27	(4.26)	4.38	(4.43)
Rueping	11.65		4.04		3.84		4.02	
	11.70	(11.67)	4.14	(4.09)	3.92	(3.88)	4.08	(4.05)
Reilly-Whiteman-Walton Co.	11.8		4.12		4.42		4.44	
			4.12	(4.12)	4.50	(4.46)	4.28	(4.36)
Ohio	12.6		4.01		4.11		4.76	
	12.6	(12.6)	3.96	(3.99)	4.24	(4.17)	4.71	(4.73)
			3.99		4.16			

R. M. KOPPENHOEFER, *Chairman,*
Oils and Fats Sub-Committee.

Received June 3, 1955.

REPORT OF THE MEETING OF THE LEATHER FINISHES COMMITTEE

HELD MAY 22, 1955

Members Attending: Robert Welch, Elwood Presley, Robert Shaw, Edmond Chandler, Henry Miller, Alfred Fleisch, R. G. Ashcraft, C. David Wilson, Titus Weaver, C. Paul McKee;

Guests in Attendance: George H. Von Fuchs, Charles Smith.

After a comprehensive review of the bleed test, originally proposed by Mr. McKee, and thoroughly investigated during the past year, the Committee agreed that sufficient information has been obtained to warrant the adoption of this test as a provisional method.

A plan was organized for investigating the possibility of using the Gardiner 110 Straight Line Washability Machine as well as a Standard Crockmeter for the purpose of estimating the propensity of various leather finishes to bleed on to white stitches in certain shoe manufacturing operations. Mr. Miller volunteered to furnish the necessary finished leather Specimens, suitably stitched for this project.

Respectfully,

BERNARD ROLL, *Chairman.*

Received June 3, 1955.

The Destructive Action of Foot Perspiration on Leather*

By K. H. GUSTAVSON

Garverinaringens Forskningsinstitut,
Stockholm, Sweden

ABSTRACT

The literature on the action of foot perspiration upon leather is reviewed. All evidence points to the fact that the lactate content of sweat is responsible for most of the destructive effect of excessive perspiration on chrome upper leather while it does no harm to vegetable leather.

Another component of sweat, urea, causes no harm to chrome leather, but is deleterious to vegetable leather, especially to vegetable insoles.

Most of our leather production goes into shoes. The heavy leather for soles and insoles is mainly vegetable tanned. The shoe upper leather is mostly chrome tanned, except for work shoes and ski boots for which a chrome-vegetable combination tannage is often used. Leather for the interior of the shoe, especially for linings is either vegetable or chrome tanned.

In varying degrees, all these leathers composing a shoe may be exposed to the perspiration of the foot, which can reach considerable proportions in warm weather, especially at high relative humidity. The sole of the foot, principally in the vicinity of the toes (metatarsal region), contains a great number of sudorific glands. The total amount of perspiration given off in 24 hours is normally about one per cent of the body weight [1].

The leather of the shoe is not directly exposed to the flow of sweat, since the hosiery and also the textile materials in the form of shoelinings are in direct contact with the foot. The flow of perspiration will be primarily taken up and stored in these textile materials and gradually given off to the leather of the shoe. Hence, normally the leather is exposed to the action of accumulated perspiration which has been changed appreciably by micro-biological agents. It should be mentioned that the best material, as far as the absorbing capacity for and retention of sweat is concerned, is wool; and the least satisfactory nylon, cotton and rayon. Being an amphoteric substance, wool is able to combine with the main constituents of the sweat deleterious to the leather and hence immobilize them. Light socks of wool have proved to be the most comfortable foot coverage even for summer wear.

Sweat is described as a clear colorless fluid consisting of 99 per cent water, with sodium chloride as the predominate solid. According to Hammarsten [1], certain samples of human perspiration are alkaline and others, the great

*A review of the author's earlier work, presented in Swedish journals, in 1942—1944, and in a recent lecture, 1954.

majority, are acidic. From more recent analyses of sweat collected from healthy human subjects, the total solids are found to be about one per cent of the sweat. They consist of about 80 per cent of sodium chloride, 10 per cent lactic acid and about 5 per cent urea. The lactic acid content may reach levels of 300 mg. per 100 ml. of sweat in perspiration given off by individuals carrying out hard work at high temperatures and humidities [2]. The secretion from the sebaceous glands, known as sebum, is mixed with the sweat and helps to protect the skin. It is an emulsion of fatty acids, proteins and cholesterol. Therefore, cholesterol is often found as a constituent of artificial preparations of perspiration fluids.

Colin-Russ [3] who is the pioneering investigator of the leather—perspiration problem has formulated several preparations of synthetic foot perspirations; the final, most simplified one contains: 1 g. of urea, 5 ml. of lactic acid, 1 ml. of a 10 per cent solution of disodium phosphate, 100 ml. of *N* sodium chloride solution, with distilled water added to yield a total volume of 500 ml. For synthetic perspiration to be used as an emulsion for imitating sweat and sebum, 500 ml. of the standard synthetic perspiration is added to a molten mixture of 20 g. of cholesterol, 5 ml. of butyric acid, 10 ml. of saturated alcoholic egg lecithin and 1 g. of tallow. The perspiration fluid is used at various dilutions, mostly diluted 1:10, and the pH value adjusted upwards by the addition of alkali.

It appears that in most instances of experimental simulation of the effect of sweat on chrome leather, unadjusted solutions entirely too acidic (pH values of 3 or lower) have been used. Actually the leather on wear will be exposed to the accumulated perspiration which through microbiological (enzymatic) processes has its pH value elevated to the range of pH 7 - 7.5, mainly because ammonia is formed by the action of urease on accumulated urea. It is this author's experience, that ammonium and sodium lactates act more aggressively on chrome leather than solutions containing the same concentrations of lactic acid [4], which findings will be explained in the following.

The author has for years used a synthetic perspiration for tests on chrome as well as on vegetable tanned leather. It has the following composition (the quantities refer to 1 liter solution): 20 g. of sodium chloride, 20 g. of urea, 10 g. of ammonium lactate and 1 g. of Na_2HPO_4; the final pH value being adjusted to 7.4 – 7.6. The specimens to be tested are soaked in this solution until completely penetrated by the solution. They are then immediately dried in a drying oven at 50°C. for 24 hours. After conditioning at 65 per cent relative humidity at room temperature, they are tested for the degree of flexibility of the grain (bending or flexing in the Darmstadt flexing machine). The treatment is repeated until cracks appear in the flexing test. For upper leather, 100,000 flexes are normally run. For details on suitable equipment and the experimental technique, the paper by Galley and Tapp [5]

may be consulted. It appears that their mode of working, imitiates very closely actual conditions of wear, with alternate wetting and drying of the shoe upper leather at an accelerated rate.

The foot perspiration contains two major constituents, each of which is specific and harmful for one of the two principal types of leather used in shoes. Firstly lactic acid, as an organic oxyacid of great complexing power for chromium, is a powerful detanning agent of *chrome leather*, since it forms stable chelate compounds. Particularly in the form of alkali salts it shows drastically this injurious effect on chrome leather [6]. Even the common salt (sodium chloride) in sweat is by its mass action effect, somewhat deleterious to the chrome upper leather of the shoe. Secondly, the urea, which in concentrated solution is a potent detanning and denaturing agent of *vegetable tanned leather*, possesses a very marked power for displacing fixed vegetable tannins from the leather [7]. These specific effects of lactate and urea on chrome and vegetable tanned leather respectively are indeed expected from our knowledge of the nature of the two tannages. It should also be noted that urea has no detrimental effect on chrome leather, neither has the lactate ion on vegetable tanned leather [6], [7].

The destructive effect of foot perspiration on leather is cumulative. The accumulation of the primary products in the leather, and also their conversion into other substances far more injurious to leather, occurs gradually. Hence the defects produced in the leather are generally first noticed after prolonged wear of the shoes in cases of normal foot perspiration.

Types of abnormal foot perspiration which may be mentioned are blood, glucose, and uric acid types. These are associated with pathological conditions: chromhidrosis, diabetes, and gout respectively. The latter type is by far the most common one of the three. These abnormal types of perspiration may damage leather in a relatively short time of wear, particularly by the exudate ("spue") which is usually formed in the pores of the grain of the leather, glueing the fibers together and stiffening the leather. The flexibility will be impaired in these spots and the grain membrane will gradually break forming open cracks in the leather [3].

The condition of weak ankles, or what is popularly known as "tired or aching feet", is often attended by abnormal composition of the foot perspiration, particularly by a profuse excretion of lactic acid [3]. The destructive action of this type of perspiration on the leather is more rapid than that of the normal perspiration produced under conditions of good foot hygiene. These rather rare types of perspiration and their damage to shoe leather have been comprehensively studied by Colin-Russ in his 1935 paper, and will not be further considered in this resumé.

Regarding the damage of normal foot perspiration to chrome leather as far as changes of the chemical composition of the leather resulting from the action of the sweat is concerned, it should be noted, that the *sulfato* groups

of the chromium complexes, irreversibly combined with collagen in the leather are partially displaced. The lactate ion, which penetrates into the chromium complexes and removes complexly held sulfate groups, arises mostly from the dissociation of the ammonium and sodium lactate and only sparingly from the free lactic acid, which as a weak acid does not ionize to any extent.

It was shown that the lactate ion is an exceedingly powerful complexing agent towards chromium [6]. Moreover, the mass action effect of the sodium chloride accumulated in the leather on the chromium complexes will contribute to this displacement [8]. Sodium sulfate is formed by the interaction of sodium chloride with the chromium sulfate complexes of the leather. On rapid drying of the wet shoe, the sodium sulfate shows up as a white spue on the uppers. These changes of the complexes actually result in a mild overneutralization of the chrome leather by the entrance of chloride groups, with displacement of sulfato groups, into the complex. However, the properties of the leather are not seriously impaired as a rule, the white spue being the chief nuisance.

More disastrous for the chrome leather is the detanning effect of the lactate ion, as demonstrated in the early paper [6]. The lactate ion competes successfully with the carboxyl groups of collagen for the valencies and coordination sites on the chromium atom, by virtue of its strong chelating power. The final result is a more or less extensive rupture of the crosslinks between adjacent protein chains, which links are supplied by the sulfato–chromium complexes. The leather is detanned. It may even attain a lower hydrothermal stability than that of the untanned collagen, since some of the weaker stabilizing crosslinks present in the native collagen are not reformed. The result will be particularly disastrous, if the leather is soaking wet and then dried rapidly, even at rather moderate temperatures. The detanned zones of the leather are then turned into a glassy state, becoming very brittle and inelastic. Even a slight mechanical impact or light flexing of the leather, as that experienced in walking, will now cause cracks in the grain membrane. On extended wear, the cracks will also appear on leather vamps which have not been exposed to the wetting-drying cycle, particularly in the leather area directly above the welt, and in the regions near the little toe of the foot. These areas are more exposed than others to the accumulated perspiration and to the heavy flexing of the leather during the wear of the shoe. The cracks will gradually be enlarged, and the leather irreparably damaged.

Colin-Russ [3] states in his 1945 paper that sodium chloride causes the greater loss in the sulfate content of the leather, while lactic acid was more effective in dissolving fixed chromium. However, according to the present author's experience based on extensive investigations at the higher pH values of the accumulated and decomposed sweat, the effect of the lactate ion is very much greater than that of lactic acid (mainly non-ionized). Hence, under conditions of wear, the displacing and detanning effect of aged

sweat is mainly due to the attack of lactate ion (as lactate) on the chrome leather. This effect escaped Colin-Russ because he experimented with synthetic foot perspiration fluid of lower pH values. He found the white spue of the leather specimens exposed to perspiration to consist mainly of sodium sulfate, probably formed by the entry of sodium chloride into the sulfato-chromium complexes.

Appreciable amounts of chromium may be removed from chrome leather by prolonged action of decomposed perspiration products, as shown by Colin-Russ [3], Galley and Tapp [5], and this author [6]. Galley and Tapp observed that the solubilized chrome from the deteriorated spots on the moist vamp migrated through the area exposed to the flexing and pumping action to other parts where the chrome was finally deposited, due to evaporation of the sweat.

An actual case, showing the effect of normal perspiration on the composition of chrome leather (box calf) in a pair of long worn rubber soled boots, is exemplified by the data in table I [6]. The areas of the vamp close to the welt had a crystalline and glassy appearance. These regions were brittle and showed cracks all through the leather. No spue was present. The leather of normal appearance in the same vamp served as a blank, representing the original leather. The figures are stated in per cent on the hide substance basis.

TABLE I

Analysis of normal and embrittled areas of chrome upper leather in a pair of worn boots.

Percentage	Normal areas	Areas embrittled from excess perspiration
Total chromium, as Cr_2O_3	8.2	8.1
Soluble chromium	0.0	trace
Total sulfate, as SO_4	6.8	3.9
Neutral sulfate, as SO_4	0.3	2.1
Combined sulfate, as SO_4	6.5	1.8
Total ammonium, as NH_4	0.0	0.5
Total chloride, as NaCl	0.1	1.4
Acidity of the sulfato-chromium complex in the leather	32	9
Acidity of the chrome collagen compound	40	9

These data show that the detanning effect of the perspiration has not resulted in any loss in fixed chromium. All protein-bound acid and more than two-thirds of the complexly bound sulfate have been removed. Indications are that they have been converted into sodium and ammonium sulfate. The lactate was not determined, although it was probably the lactate which weakened the bonds between the carboxyl groups of collagen by displacing the fixed chromium complexes, and severing the cross-links, which implies detanning of the leather.

There is no proven way of making a chrome leather resistant to perspiration, although patents with such claims have been taken out. For instance, according to one method [9] the easily displaceable part of the sulfate groups in chrome leather is displaced by chloride on treatment of the leather in concentrated solutions of sodium chloride. None of the methods suggested seems to have been successful or to have found practical application. It appears to the author, that a treatment of ordinary chrome tanned leather in solutions of compounds capable of complexing chromium to a fair degree, as for instance the aromatic sulf-carboxylic acids introduced as auxiliary tanning agents by Otto [10], might give some protection of the leather against the destructive effects of perspiration. The sulfophthalates would serve as examples.

Regarding the damage to insoles, and vegetable tanned leather generally, it was formerly believed that the cracking and darkening of the insoles on wear, with the concomitant curling and shrinkage of the leather upon forced drying of the shoes, was caused by alkaline products formed from the accumulated perspiration, mainly in the form of ammonia and its salts, especially the carbonate. However, in an investigation of the effect of concentrated solutions of urea on vegetable tanned leather [7], it was found that a considerable part of the irreversibly fixed vegetable tannins was removed and concomitantly the shrinkage temperature of the leather was lowered, in some vegetable tannages very drastically. Certain vegetable tanning materials were stripped completely, and the untanned hide remaining showed even less stability than raw hide against wet heat. It was "peptized" and denatured. These findings have been confirmed by Simoncini [11]. It was suggested that the strong detanning and "peptizing" action of the urea solution on vegetable tanned leather may have its counterpart in the action of foot perspiration on vegetable tanned leather. With the minute amounts of *free* water in the leather, large concentrations of urea may gradually be built up. The view was expressed that the deterioration of vegetable tanned leather exposed to perspiration probably is not caused by the detannization by weakly alkaline substances (ammonium salts), formed secondarily. They were considered to be of little importance since the results from experiments with solutions of ammonium lactate of pH 7.5 showed only a slight effect. The buffering capacity of the leather should not be overlooked in this connection. It was concluded that the destruction of bark-tanned leather by perspiration cannot be accounted for by the moderate increase of the pH of the leather due to accumulated secondary products of the sweat and by the leaching out of a part of the vegetable tannins.

Grassmann and Stadler [12] have used a solution containing 1 per cent NaCl and 0.6 per cent ammonium carbonate, adjusted to pH 9.0 by means of sodium hydroxide as artificial perspiration in the accelerated testing of vegetable tanned insoles for their resistance to foot perspiration. Thus they

take into account that the main part of the accumulated urea is decomposed into ammonium carbonate by urease. They conclude from their experiments with this rather alkaline solution that they simulate the actual deterioration of leather in shoes by sweat during wear. However, it appears to the author that this type of solution with an initial pH of 9 is not representative of the pH value of accumulated perspiration which is generally below 8 and in most cases between 7 and 7.5. The marked detanning action of buffer solutions with such high pH values as 9 is not questioned so much as the possibility of forming products of such a high degree of alkalinity in vegetable-tanned leather, first in view of its powerful buffering capacity, and secondly because of the presence of salts of weak acids. Nevertheless, the method of Grassmann and Stadler may be useful for evaluating the degree of stability of bark-tanned leather to alkaline solutions.

In view of the perfect stability of the formaldehyde-tanned and the chrome-tanned specimens of leather to solutions of 6 - 8 molar urea, reported in the investigation cited [7], and particularly in view of these leathers being practically unaffected as to their hydrothermal stability, it should be expected that leathers obtained by vegetable tannage, in combination with the two tannages mentioned, would withstand the deleterious effect of perspiration. Simoncini [11] has shown that the mineral-vegetable combination tannages yield leather of good resistance to concentrated urea solution. The resistance of such combination tanned leathers to perspiration has been amply proved by American workers [13]. It is interesting to note that ammonium carbonate is a main component of the synthetic perspiration employed in the recently published Federal Specifications of the U. S. for testing the wearing qualities of insoles in shoes [14].

The matter of insole deterioration of civilian shoes is a less serious problem than the grave damage to insoles under severe service conditions, such as experienced by the U. S. armed forces in the tropics, which has been well documented. In a report on the evaluation and improvement of leather insoles, Kremen [13] describes the suitable approach to the problem, including the methods and the equipment used for simulating the accelerated degradation of the leather and its testing under conditions considered to correspond essentially to those of actual wear. From laboratory data and actual wear tests, Kremen concludes that the only treatments which appear to be of significant value are those resulting in stabilization of the vegetable tanned leather, by the application of basic chromium or aluminum salts as a pre- or retannage, and by a retannage with formaldehyde. The formaldehyde tannage, besides being as effective as the mineral tannages, has a decided advantage over the other combinations, since it yields a leather with appearance and general character almost indistinguishable from the conventional product.

In conclusion, it is perhaps worth pointing out that the economical losses due to damages of leather in shoes by foot perspiration amount to millions of dollars annually, and are especially heavy in countries with a low *per capita* consumption of shoes and with a humid and hot climate.

Since this paper was written, a paper on the resistance of white leather to breakdown by perspiration has appeared [15]. In this interesting paper further evidence for the deleterious action of lactate on chrome leather is presented.

References

1. Hammarsten, O., "Lehrbuch der Physiologischen Chemie", Bergmann, Wiesbaden 1914, pp. 797 - 799.
2. Weiner, J. S., and van Heyningen, R., *Nature*, **164**, 351 (1949).
3. Colin-Russ, A., *J. Hyg. Camb.*, **35**, 199 (1935); **40**, 447 (1940); **43**, 72 (1943); 45, 531 (1945).
4. Gustavson, K. H., *Unpublished findings, reported in Lädertidningen*, No. 17, 1954.
5. Gallay, W., and Tapp, J. S., *J. Am. Leather Chem. Assoc.*, **36**, 513 (1941).
6. Gustavson, K. H., *Lädertidningen, No.* 12 - 13, 1942; *"Läder, dess Kemi, Tillverkning och Egenskaper"*, *Bonnier, Stockholm*, 1944, pp. 279 - 282.
7. Gustavson, K. H., *J. Am. Leather Chem. Assoc.* **42**, 13 (1947).
8. Gustavson, K. H., *"Stiasny Festschrift"*, 1937, p. 98.
9. *German Patent* No. 658413 (1935): *U.S.A. Patent* No. 2144647 (1936).
10. Otto, G., *Das Leder*, **3**, 12 (1952).
11. Simoncini, E., *Cuoio Pelli Mat. Concianti*, **29**, 204 (1953).
12. Grassmann, W., and Stadler, P., *Das Leder*, **4**, 218 (1953).
13. Kremen, S. S., *Quartermaster Rev.*, December 1951; *J. Am. Leather Chem. Assoc.* **48**, 333 (1953).
14. *Federal Specification for Leather*. KK-L-311a (1953), method 3211.
15. Roddy, W. T., and Lollar, R. M., *J. Am. Leather Chem. Assoc.* **50**, 180 (1955).

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ABSTRACTS

Turkish Leather Manufacture in Ancient and Modern Times. By O. Gerngross. *Das Leder*, **6**, 33 (1955). Ancient methods of tanning in Turkey are briefly described; some of these are still practiced. Illustrations are given of ancient leather garments and other items. I. D. C.

Colorimetric Microdetermination of Chromium and Manganese in Aqueous Solutions. By A. Kozawa, M. Tanaka and K. Sasaki. *Bull. Chem. Soc. Japan*, **27**, 345 (1954). Chromium and manganese less than 100 μg. in 500-1000 ml. of solution are separated from a bulk of the solution by ferric hydroxide precipitation and the separation of chromium from manganese and iron can be carried out by the reduction of ferric iron to ferrous followed by the precipitation of aluminum hydroxide. Each element was determined colorimetrically using silver peroxide as oxydant. No coprecipitation of chromate could be observed in this procedure. I. D. C.

Qualitative Determination of Amino Acids in Protein Hydrolysates by Circular Paper Chromatography. By I. Oreskes and A. Saifer. *Anal. Chem.*, **27**, 854 (1955). A circular chromatographic technique for the identification of amino acids in protein hydrolyzates uses phenol and butanol-acetic acid as the solvents, isatin and ninhydrin as the color reagents. R values compare favorably with those obtained by other investigators using buffered filter papers. The small size of apparatus and the speed and simplicity of the method make it very useful for routine analysis of amino acids. Quantitative applications of the technique are now under investigation.

Colorimetric Determination of Sulfate Ion. By J. L. Lambert, S. K. Yasuda and M. Grotheer. *Anal. Chem.* **27**, 800 (1955). A colorimetric procedure for determining sulfate ion in the range of 0 to 400 p.p.m. is described which uses an insoluble thorium borate-Amaranth dye reagent. Sulfate ion releases dye molecules from the solid reagent in direct proportion to its concentration and is determined indirectly as the concentration of the dye at 521 mu. Potentially serious interferences by fluoride, phosphate, and bicarbonate ions are eliminated through the use of added lanthanum ion and a weak acid cation exchange resin. Seven water samples were analyzed by this method with the results in good agreement with standard gravimetric analysis.

Detection of Surface Active Agents Containing Polyoxyethylene or Polyoxypropylene Group. By M. J. Rosen. *Anal. Chem.*, **27**, 787 (1955). Although a number of qualitative tests for the polyoxyethylene group have recently appeared in the literature, they suffer from a lack of specificity. The present test depends upon the thermal decomposition of the polyoxyethylene linkage in the presence of phosphoric acid to yield acetaldehyde, which produces a blue color with sodium nitroprusside and diethanolamine. The polyoxypropylene group, under the same conditions, yields propionaldehyde and its polymers, which produce orange colors. Positive results are obtained in the presence of the ester, alkylaryl, sulfide, sulfonate, sulfate, amino, amido, and phosphate groups. The only compounds which give positive results in the absence of the polyoxyethylene or polyoxypropylene groups are gylcerides which, under the conditions of the test, decompose to acrolein, which also gives a blue color with sodium nitroprusside and diethanolamine.

Procedure: Place 200 mg. (or 4 drops) of anhydrous surfactant and 1 to 1.5 ml. of 85% phosphoric acid in a 5- or 6-inch test tube and agitate thoroughly for a few seconds. Insert a 0.5-inch plug of absorbent cotton into the mouth of the test tube (to prevent condensed water vapor from falling back into the hot reaction mixture with consequent violent spattering during the pyrolysis) and attach a glass delivery tube with a 60° angle bend by means of a one-hole rubber stopper. Clamp the test tube at an angle of about 30° from the horizontal, to that the main portion of the delivery tube is vertical. The end of the delivery tube should pass beneath the surface of the "detecting solution" contained in a 4-inch test tube placed on a white surface to facilitate observation of any color change. The detecting solution consists of 1 ml. of water to which have been added 2 drops of sodium nitroprusside solution (20 grams of sodium nitroprusside dihydrate dissolved in 50 ml. of water and diluted with 450 ml. of methanol) and 1 drop of diethanolamine. Heat the mixture of phosphoric acid and surfactant with a 2-inch flame until the mixture turns dark brown. If foaming is excessive, discontinue heating momentarily to allow foaming to subside somewhat, then heat the entire test tube surface strongly just above the level of the foam and then move the flame down to the upper level of the foam. As the foam disappears under the intense heating, move the flame down the tube, keeping it always at the upper level of the foam until the liquid portion of the mixture is once again being heated by the flame, continue the pyrolysis until either a blue color or an orange color (which may or may not change to dark brown) appears in the detecting solution (positive result) or for

a maximum of 5 minutes if no blue or orange appears (negative result). 45 surfactants and their characteristic color reactions are given.

The Importance of Effective Acidity in Vegetable Tanning. By G. H. W. Humphreys. *The Leather Manufacture,* **71,** No. 4, 23 (1954). A brief summary of the evolution of tanning solutions, from weak liquors like Oak bark to the tannin extracts of today, is given. Data are presented on the work done in England on acidification of various tanning materials e.g. Wattle, Quebracho, both ordinary and sulfited, Chestnut and Myrabolams. Lowering the pH in the case of the catechol tannins produced a higher degree of tannage while the more acid pyrogallol materials gave a decreased degree of tannage when liquors at higher than the natural pH were used. Generally speaking, sulfited Quebracho, because of its content of SO_3— groups, which aid penetration, is the best material for use in the early rockers and coloring pits. The same rapid penetration may be obtained using a Wattle bisulfited with about 2 per cent sulfite on the weight of solid extract. Using Quebracho liquors of different degrees of bisulfitation it was established that the higher the degree of bisulfiting the more rapid the penetration. Under certain conditions complete penetration of heavy steer hide was accomplished in less than 24 hours using liquors of 100 degree Bk. Careful blending of natural Wattle extract with sulfited Quebracho brought about an improvement in the collidal condition of the liquors with a consequent improvement of the tanning properties. The pH at which tanning is conducted is the main difference between British methods and those employed in many other countries. In Continental Europe the pH range of 4-5 is used while in England the tannage usually commence at about 3.5-4.0 and finish at pH 3.0-3.3. Not only is the firmness of the leather greatly affected by the pH at which the extract is used, but the fixation of tannin is greatly increased and consequently the water solubles are reduced. Analytical data are given on experimental tannages using of Wattle extract at its natural pH, around 4.6, and also on acidified Wattle liquors at pH levels of 3.9, 3.5 and 3.2. All samples were first struck through at the natural pH and then tannages completed at the above pH's. Analysis showed greater degree of tannage at lower pH ranges while the overall yield of leather from the four liquors was the same. Data are given for per cent water absorbed on all samples, rolled and unrolled. Method of controlling the effective acidity of liquors that is in use in most British tanneries today is described as follows: 1 cc. of the tan liquor under test is titrated in 200 cc. of purified or CO_2 free distilled water with $N/20$ caustic soda (for greater accuracy 10 cc. of a 10 percent solution of the tan liquor is used and titrated) against a pH meter to pH 6.5 and the quantity of alkali required is used to calculate the quantity of acid present in milligram equivalents per liter. Tables are included showing the pH and quantity of natural acids present in liquors of 150 degree Bk. for twelve popular tanning materials. Samples of ox hide were tanned in Wattle liquors acidified with six acids used from time to time in the tannery. Acids used were acetic, lactic, formic, hydrochloric, citric and sulfuric. Data given show final pH in each tannage was 3.2 but the quantity of acid present varied considerably. Duplicate samples of the leathers were then wheeled in fresh hot liquors at 40 degrees C. Analytical data for these leathers are shown. The following factors should be taken into account when choosing an acid or acids to acidify Wattle or Quebracho: Its effect in bringing about fixation of tan at a given pH, its effect on firmness and the leather fibre, its cost and availability and the amount required to bring about a given effect. A table is given showing the quantity of various acids required to acidify Wattle and sulfited Quebracho liquors of 150 degree Bk. to pH 3.5 and 3.2. Lactic acid is considered the best by the author and in combination with a blend of acetic and formic is very popular in England for acidifying Wattle. Method of manufacture for a good acidified Wattle extract is given, also methods of using the extract and blends of it and Quebracho to the best advantage. R. B. K.

Dyes in Coloring and Finishing Leather. By C. H. Geister. *Leather and Shoes*, **129,** No. 3, 18 (1955). The author stresses the fast growing importance of color in sales appeal. Various types of leather and the problems connected with obtaining level dyeings are discussed. Brief outlines of the problems met, and some possible solutions, in the dyeing and finishing of Softee or glove side leather, upholstery leather, suede shoe leather and garment and millinery leathers are presented. Dye selections and special attention to the fastness requirements for specific end uses are the means by which many improvements can be accomplished in the leather industry although there will have to be a closer cooperation between the tanner and supplier. Improved fastness properties can be obtained by carefully selecting the leather, by using the best methods for preparing the leather, the most suitable dyes and application procedures. R. B. K.

New Method for Reclaiming Leather Scrap and Dust. *Leather and Shoes*, **129,** No. 22, 28 (1955). A scrap reclamation technique, originally developed to facilitate the recovery of wood waste materials, is now being investigated as a possible method of reclaiming leather dust. If successful in the leather industry it will have two great advantages: It will greatly reduce the quantities of binding materials that are required to rebond leather particles, and thus minimize material costs. It will reduce processing costs by making it unnecessary to break scrap materials down into relatively fine particles before they are rebonded with adhesives. Basic idea of the process is to spray coarse dust-type materials into an aerosol atmosphere which is created by using pneumatic spray guns to permeate the air of a small chamber with a solvent-dispersed resin, thus causing the deposition of a sub-microscopic thickness of adhesive film, on the surface of the dust particles. After drying they can be compression molded into an exceedingly tough solid. Solvent dispersed elastomers of the thermoplastic type should be most satisfactory for the reclamation of leather dust. As few as six parts resin can be used to reclaim a hundred parts scrap.
R. B. K.

The Silicones: Tailor-Made Magic for Leather and Footwear. *Leather and Shoes*, **129,** No. 8, 14 (1955). Leather that is waterproof yet breathable; shoes that stay new looking longer, are more flexible, more comfortable and leather that resists cracking, soiling and stiffening are the claims from "molecular engineering" with silicones. Silicones are a chemical hybrid, part organic and part inorganic. Synthetic compounds, they are a new class of materials with unusual properties, formed from quartz or silica. Silicone fluids can be made with the thinnest viscosity or by rearranging the molecules they can be made as thick as molasses. The silicones will resist heat of nearly 2000 degrees F. or 100 degrees F below zero. Several tanners are now producing silicone treated leather by the Dow-Corning "Sylflex" process. This is being used to produce work shoes, football shoes, golf and childrens shoes and high grade hunting boots. The Army is also conducting experiments with silicone treated leathers for use in military footwear. An outstanding property of silicones is its extreme resistance to moisture without affecting the natural properties of leather. They are also resistant to stains from such sources as ink, mud, liquid chemicals, etc. Perspiration, as tests have shown, will evaporate through the silicone treated leather as it will through the untreated leather, but with far less deteriorating effect upon the leather itself. Silicone treated soles wear longer, stay drier and retain flexibility. Also silicone treated linings may well give longer service. To apply silicones the leathers are passed between two silicone saturated rolls, just prior to the finishing operation, and the leathers are impregnated by compression. This is done from one to three times depending on the weight of stock. The leather is then dried, either at room temperature or with mechanical drying apparatus. The leather is then finished. Finishing presents no problems. According to the producer proper application for maximum results is via impregnation,

other methods such as painting do not prove satisfactory. Silicone treated shoes at retail would sell for from .50 cents to 1.50 a pair more than untreated shoes, depending upon the type of shoe. This cost is expected to be gradually reduced as volume use of the silicone compound increases. A short history of the development of silicones is given. Several photos of treated and untreated leathers are included. R. B. K

A Critical Review of the Literature of 1954 on Sewage, Waste Treatment, and Water Pollution. By H. Heukelekian, *et al*, *Sew. and Ind. Wastes.*, **27**, 633 (1955). In this second section of the Annual Literature Review dealing with industrial wastes and water pollution the following reference to tannery waste treatment is given: Taylor ["Disposal of Tannery Wastes". *Sanitalk*, **1**, 4, 24 (1953)] tells about tannery wastes discharge to a stream at Ayer, Mass., that caused deterioration of the town's well-water supply. The waste waters are now mixed with domestic sewage and treated by biological filtration at the municipal sewage works. Dular ["Treatment of Tannery Waste Waters with Vegetable Tannin Residues." *Nova Proizvodnja*, **6**, 581 (1952); *Water Poll. Abs.* (Brit.), **27**, 221 (1954)] reported on a method for treating tannery wastes containing albuminoid materials by coagulation with the correct proportion of tannins and pH control after neutralization. Southgate ["Treatment of Waste Waters from Tanneries". *Jour. Soc. Leather Trades' Chem.* (Brit.), **37**, 393 (1954)] is of the opinion that there currently is no satisfactory method for treating tanning wastes and believes that it is first necessary to have a concerted drive to reduce the sources of waste in the tanneries before it will be feasible to treat the waste waters. Mathis ["Waste Waters from Tanneries". *Bull. Centre Belge et Document Eaux* (Belgium), **5**, 5, 37 (1954)] conducted laboratory and plant-scale experiments on the treatment of tannery wastes. Physical methods included screening, settling, and centrifuging. Of these, only screening through 1-mm. screens proved practical, giving 50 per cent removal of settleable solids and 12 per cent removal of B.O.D. Chlorination with 7,080 p.p.m. of chlorine reduced the B.O.D. by 53 per cent after 24-hr. contact. Flocculation with 5,000 to 9,000 p.p.m. of ferrous sulfate reduced the suspended solids by 97 to 99 per cent and the B.O.D. by 19 to 56 per cent.

In summarizing the literature for 1954 and noting significant trends the authors state: The increase in the number of references included in the review under the various sections is apparent from the following:

	1954	1953
Analytical methods	100	64
Sewage	212	166
Radioactivity	116	59
Industrial wastes	258	191
Water pollution	264	256
	950	736

It is difficult to summarize the mass of information that is included in this review. However, certain general and significant trends and developments might be pointed out briefly, as follows: 1. The demonstration that chlorate oxygen is available for biochemical oxidation and thus, by measuring the increase in chloride, which is the product of the reduction of chlorate, an alternative method for B.O.D. can be developed. 2. Continued investigations on the B.O.D. of pure compounds and the importance of seeding with appropriate acclimatized cultures for the establishment of proper B.O.D. values. 3. The demonstration that in nitrification the rate of oxygen uptake is independent of the amount of the primary oxidizable material (ammonia) and, therefore, at least this type of oxidation is not a first-

order reaction, but the rate is related to the number of nitrifying bacteria. 4. Continued interest in evaluating pollution, either by over-all chemical oxygen demand methods or by analysis for specific chemical compounds, such as detergents and other specific compounds found in wastes. 5. Concerted efforts by a number of investigators on methods for determining D.O. by electrometric methods and for continuous automatic recording. 6. Development of methods for determination and differentiation of various forms of residual chlorine. 7. Considerable effort has been manifested in elucidating the mechanism of aeration and attempts have been made to increase the aeration efficiency in order to allow higher loadings in the activated sludge process. 8. Study of the physical, chemical, and biochemical effects of detergents on sewage treatment processes continues, with particular emphasis on the problem of frothing in activated sludge plants. 9. Some differences of opinion exist in regard to the future of high-rate digestion, which several investigators have shown to be feasible on the basis of laboratory, pilot, and full-scale experiments. 10. Additional negative evidence has been reported as to the value of biocatalysts in promoting biochemical activities in sewage treatment processes. 11. The advantages of thickening raw sludge prior to digestion have been pointed out in a number of papers. 12. Composting of municipal wastes and sewage sludge was high-lighted in a symposium of the American Society of Civil Engineers. 13. The demonstration of the possibility of destruction by oxidation of raw sludge at high pressures and temperatures represents a new approach to the sludge disposal problem. 14. The practice of disposal of wastes by spreading or spraying on land for disposal and reclamation is attracting considerable interest. 15. The radioactivity levels of waters (polluted and unpolluted) and means of removing them are reviewed, with some 100 references. 16. Increasing interest in industrial waste problems is manifested by upward of 250 references included. The trend seems to be a continued emphasis on prvention of losses, recovery, spray irrigation, and lagooning for dairy, cannery, and paper mill wastes; biological treatment from the standpoint of better exploition; specialized applications of the activated sludge process for dairy and paper mill wastes; and continued use of high-rate trickling filters for a number of organic wastes. 17. Interest in biological life in surface waters appears to be high from the standpoints of the effects of various types of pollution, the use of indicator organisms for pollution, fish kills, and environmental conditions (such as the effect of temperature, pH, D.O., specific chemicals, and industrial wastes) for the maintenance of various kinds of fish. 18. Despite the increase in pollution of waters, it is interesting to note that only 11 outbreaks of disease reported in 1953 were traceable to water. Gastroenteritis, amoebic dysentery, and infectious hepatitis were the common diseases attributed to water.

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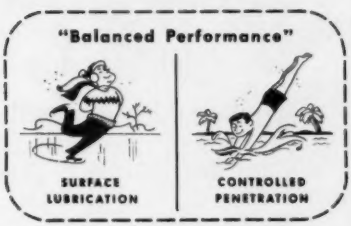

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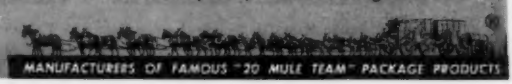

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